How to Diagnose Your Trouble.

3D.

MOTOR CYCLING

No. 518. VOL. XX.
WEDNESDAY,
OCT. 15, 1919.
Registered at the G.P.O. as a Newspaper

In Hilly Country one appreciates the wonderful multi-gear of the Rudge, just as after a few runs one appreciates the fact that this machine has gained its enviable position in the motorcycling world by merit.

Full details from—
RUDGE-WHITWORTH LIMITED
(Dept. 601), COVENTRY.
London Depot: 230, Tottenham Court Road, W. 1 (Oxford Street end).

Rudge Multi

"THE COVENTRY" CHAINS
give efficient transmission for Cycles, Motorcycles and all vehicles.

"THE COVENTRY" CHAIN Co., Limited,
Spon End Works, COVENTRY.

Matchless

THE PERFECT PASSENGER MOTORCYCLE

MODEL "H" FOR 1920.

First Samples are now being sent out and can be inspected at the following Depots:—

BIRMINGHAM—Colmore Depot, 31, Colmore Row, Birmingham.
BRISTOL—J. S. Willway & Sons, Ltd., St. Augustine's Bridge, Bristol.
CAMBRIDGE—King & Harper, 6 & 7, Bridge St., Cambridge.
CORK—Mr. R. B. Baker, 44-45, King St., Cork, Ireland.
DUBLIN—Messrs. Manthorpe & Co., 193, Gt. Brunswick St., Dublin.
EASTBOURNE—Caffyns, Ltd., Seaside Parade, Eastbourne.
EDINBURGH—Messrs. Alexander & Co., 113, Lothian Rd., Edinburgh.
ESSEX—Mr. Douglas Lamb, 151, High St., Walthamstow.
HOVE—Messrs. Hewett Bros., 94, Western Rd., Hove.
HULL—Gray Bros. & Kemp, Ltd., 362, Anlaby Rd., Hull.
LEEDS—Mr. A. I. Greenwood, 39-41, Guildford St., Leeds.
LIVERPOOL—Hitchings, Ltd., 74, Bold St., Liverpool
LONDON—H. Collier & Sons, Ltd., 44-45, Plumstead Rd., S.E.18.
Eastern Garage Co., 418, Romford Rd., Forest Gate, E.7.
Messrs. Elce & Co., 15, Bishopsgate Avenue, Camomile St., E.C.
Godfrey's, Ltd., 208, Gt. Portland Street, W.1.
Maude's Motor Mart, 100, Gt. Portland St., W.1.
Mr. A. P. Rey, 378-384, Euston Rd., N.W.1.
Messrs. The Service Co., 289-293, High Holborn, W.C.1.
Messrs. Wauchope's, 9, Shoe Lane, Fleet St., E.C.4.
MANCHESTER—Colmore Depot, 200, Deansgate, Manchester.
NEWCASTLE—British Motor Trading Corporation, Ltd., St. Thomas St., N/T.
NOTTINGHAM—Messrs. Whitfield & Co., Carrington Street Bridge.
N. WALES—N.W. Motor Exchange, Chester St., Wrexham.
READING—Mr. H. Julian, 84, Broad St., Reading.
SHEFFIELD—Mr. J. A. Stacey, 12 & 14, Ecclesall Rd., Sheffield.
SOUTHSEA—Pearson & Pearson, Ltd., 52, Elm Grove, Southsea.
YORK—Mr. C. S. Russell, 26 & 28, Lawrence St., York.

Other Districts will be announced week by week as supplies are available. No machines can be sold before the Olympia Show.

H. COLLIER & SONS, LTD.,

44-45, Plumstead Road, Plumstead——————LONDON, S.E.18.

Telephone—Woolwich 17 and 18. **Works:—Burrage Grove and Maxey Road, Plumstead.** Telegrams—"Matchless, Woolwich."

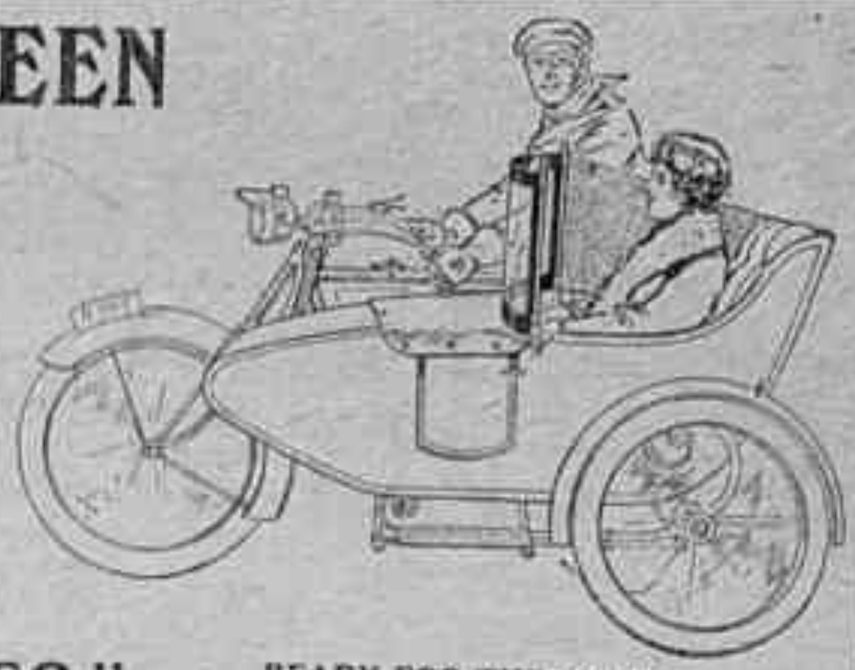
Just another note about the 1920 Clyno in the A.C.U.

OUT of the 110 riders competing, there were only 11 "clean-sheeters" at the finish, and the Clyno, notwithstanding the fact that there was only one entered—was among them. All praise to the others! As to ourselves, we KNEW the Clyno could do it—knew from our remarkable experience in our own 1600-mile test, description of which we have postponed to give prominence to the fact that Mr. Hugh Gibson, on his 8 h.p. 1920 Spring Frame Clyno Sidecar Combination, was among those "clean-sheeters" in this classic event—a test generally acknowledged to be the severest which has ever taken place upon the road;- and that we were "clean-sheeters" means—no marks lost for irregularity in running to schedule—no marks lost in hill climbing—no marks lost for road performance—and, when you think of it, what else matters to the man who wants, now and always, reliability?

THE CLYNO ENGINEERING CO., LTD.,
Clyno Works . . . . . Wolverhampton.

THE SCREEN

You Will Eventually Buy.



READY FOR THE PASSENGER. **"THE CAMEO."** READY FOR THE ROAD.

Our Aim To supply a Wind-scr en which can be fitted to any Sidecar—by a novice in a few minutes—and when fitted to give the required and expected service—to fulfil all we claim—and thereby complete the great enjoyment possible only with a Sidecar combination, by protecting the passenger, often of the fair sex, from the varied climatic conditions of wind, rain, and dust, so common in this country.

PRICE, Screen only - **£2 - 15 - 0**

" with Side Valance, as illustrated - **£3 - 0 - 0**

Sole Manufacturers and Patentees:

OLLARD, WESTCOMBE & CO., Ltd.,

46-47, Great Charles Street,

——BIRMINGHAM,——

TRADE ORDERS PROMPTLY EXECUTED. 'Phone: Central 682. Telegrams: "Ollard, B'ham."

A Confab!

Conversation of two Motorcyclists meeting for the first time at a Railway Crossing:—

First Motorcyclist (just come up to second Motorcyclist who has been waiting):—"I say, your engine ticks over nicely."

Second—"Yes! I have a **Binks** Carburetter on. It would not do this before."

First—"I wish I could get my machine to run like it. It ought to, being the same make."

Second—"It never will with the Carburetter that you have on it now, I know that."

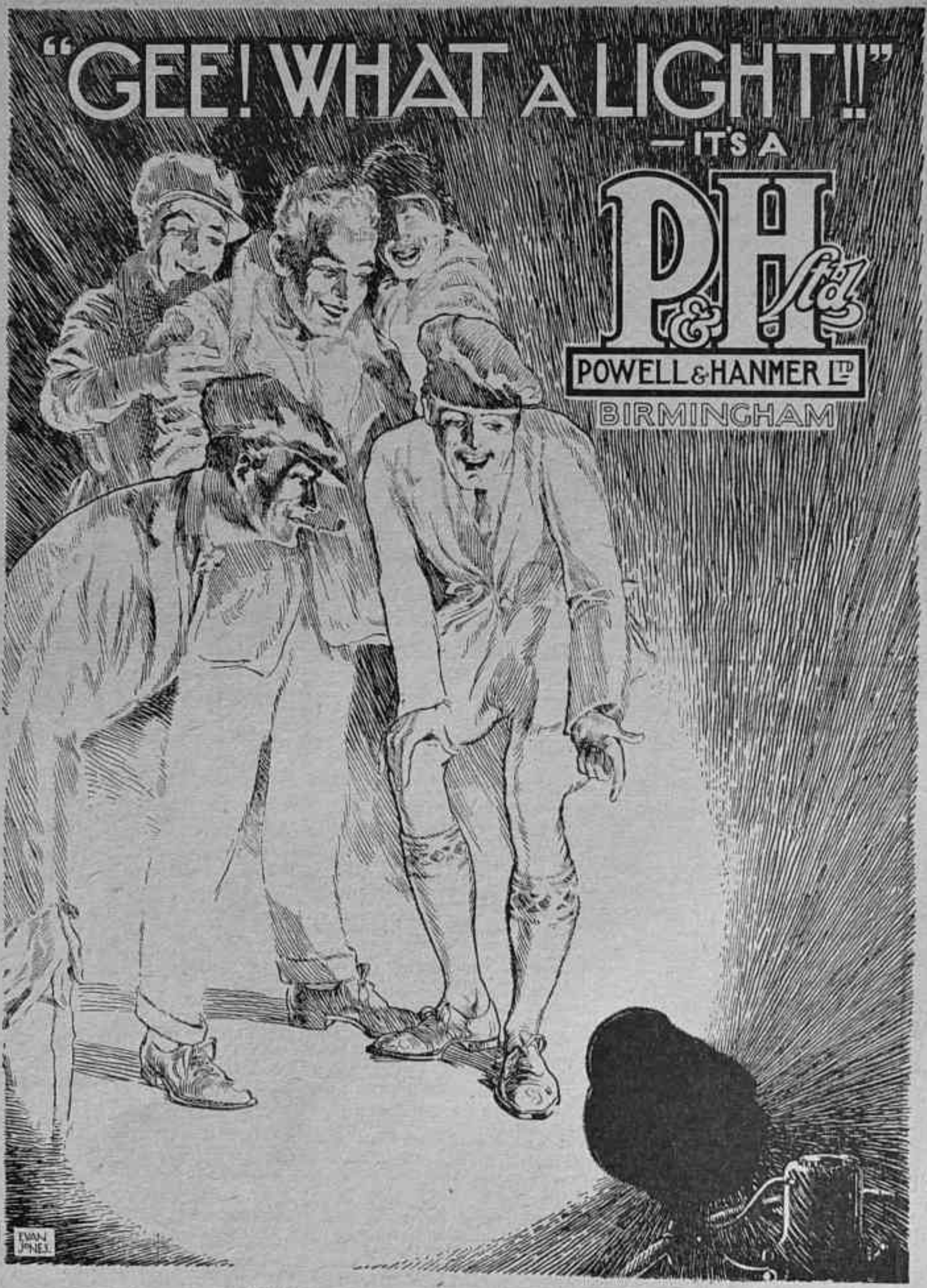
First—"But aren't they a frightful price just now?"

Second—"What of that. What is a few pounds spread over two or three years? Why, man, you save the cost in petrol bill* twice over. My jigger now does 120 to the gallon against 75 previously. Besides, look how much nicer the machine is to ride, so beautifully docile and flexible, and the way it ticks over and pulls slowly is a revelation. **Before I had the Binks** on, the engine was either roaring round or stopping. I have got rid of all that nonsense nowadays. This Bike and Carburetter are two years' old, and are as good as new. The Binks Carburetter even saves its cost in repairs to the machine."

First—"Well, I think you are right. You know Robbins who won the Manufacturers' Trophy? He is riding a Wooler now. I met him the other day, and he tells me everyone ought to get a Binks, as it is really the only Carburetter for Motor Bikes."

Send for my practical TREATISE ON CARBURATION—free.

C. BINKS, Ltd., Phoenix Munition Works, ECCLES, Near Manchester.



DO NOT FORGET TO MENTION "MOTOR CYCLING."

A3

Is it not so?

THE Engine "you can do almost anything with" because it is so lively is to the motor-cyclist what the blood horse is to the cavalier, a perpetual source of exhilaration and deep-seated satisfaction.

Yet you do not want a fierce machine, but one which, while ticking over like a car-engine, will smoothly accelerate to its maximum power

That precisely is the normal performance of the

"Blackburne"

The Machine that runs like a Car.

Messrs. BURNEY & BLACKBURNE, Ltd.,
166-168, Shaftesbury Avenue, London, W.C.2.

Telephone: Regent 276.
Telegrams: "Beemlake, Westcent, London."

Chekko Brake and Clutch Lining.

STRIKING TESTIMONY!

MOTORCYCLE BRAKE EFFICIENCY PULLS UP A RUNAWAY CAR!

"A KNIGHT ON WHEELS."

Sir,—I was a witness recently of a remarkable instance of how a motorcycle and sidecar were of invaluable assistance to a heavily loaded car in distress.

A brand new 6 h.p. A.J.S. combination was descending Kirkstone Pass towards Patterdale when it was overtaken by the car—seven up—out of control, as its brakes were ineffective.

The car driver vainly endeavoured to avoid a crash with the A.J.S., but ran into the back of the bicycle, the near side front wheel of the car being between the sidecar and the cycle.

With great presence of mind the cyclist maintained his position on the road, and by gradually and forcibly applying his brakes succeeded in checking the runaway, finally reducing its speed sufficiently to permit of it being run into the bank.

Too much praise cannot be given to the cyclist—and his machine—for his courage and skill in such an emergency. Nothing would have been easier than for him to put on speed and have left the car to a certain fatal smash, as only by some miracle could such a result have been avoided.

The A.J.S. subsequently continued on its journey, and when I left the scene the car was being made serviceable by its owner.

J. D. N. FOREMAN.

This marvellous performance was rendered possible only by the fact that the brakes of the "A.J.S." were fitted with CHEKKO Brake Lining, and it is a still further and remarkable instance of the reliability and desirability of CHEKKO-lined brakes.

Are YOUR brakes capable of standing so severe a test? The only guarantee of absolute safety in all emergencies is to ensure that your brakes are shod, as the "A.J.S." were shod, viz., with CHEKKO Lining. May be purchased from any garage.

Send postcard for sample, prices and terms, to the Sole Manufacturers:—

CRESSWELLS' LTD., Wellington Mills, BRADFORD, YORKS.

11, Bothwell Street, GLASGOW; Baltic Buildings, Gloucester Place, SWANSEA; 44/45, Exchange Buildings, New Street, Birmingham.

Telegrams—"Asbestos, Bradford."
Telephone—950 Bradford.

Contractors to the Admiralty, the India Office and War Office, the Crown Agents for the Colonies, and numerous British Railways, etc.

Count the ultimate cost

How shrewd motor-cyclists save money

When most motor-cycle owners were novices, strong words made strong impressions.

But to-day the roads are toured by veterans. These veterans have learned how to test words. They know how to prove or disprove claims.

If you are a veteran you know this: An oil that burns up rapidly or breaks down quickly cannot be really cheap. Though it may be low-priced by the gallon, it is bound to prove high-priced by the mile.

You know that a wrong-bodied oil raises your fuel consumption. Instead of saving your oil pennies it eats up your petrol pounds.

You know that wear and tear on the metal parts mean, some day, a heavy bill which the low price per gallon can never wipe out.

In recent years no oils have made such steady progress towards a dominant place in the market as Gargoyle Mobiloils.

Why?

Because now-a-days the great bulk of lubricating oil is sold to veterans—men who have learned that petrol saving depends largely on thorough piston-ring seal—who know that the piston-ring seal depends solely on the *body and character* of their lubricating oil.

Because the veteran knows that an oil which uses up rapidly is not lubricating properly.

Because the veteran motor-cyclists of to-day know that the higher price per gallon of Gargoyle Mobiloils means a lower cost per mile in operating expense.

Gargoyle Mobiloils are sold by dealers Everywhere

GARGOYLE

Mobiloils

A grade for each type of motor

VACUUM OIL CO., LTD.,
Caxton House, Westminster, S.W. 1.
Telegrams - - "Vacuum, Phone, London."
Telephone - - Victoria 9622 (5 lines)

Chart of Recommendations for

Motor Cycles

Explanation.—In the Chart below, the letter opposite the make indicates the grade of Gargoyle Mobiloils that should be used. For example, "A" means Gargoyle Mobiloil "A"; "Arc." means Gargoyle Mobiloil "Arctic," &c.

Model of	1919		1917-18		1916	
Make of Motor Cycle.	Summer	Winter	Summer	Winter	Summer	Winter
A.B.C.	A	A	—	—	A	A
Abingdon	BB	BB	—	—	BB	BB
A.J.S.	BB	BB	—	—	BB	BB
Allon	TT	TT	—	—	TT	TT
Ariel 3½ h.p.	BB	BB	—	—	BB	BB
" 5-6-h.p.	A	A	—	—	—	—
Autowheel	BB	BB	—	—	BB	TT
Bat	BB	BB	—	—	BB	BB
Bradbury	BB	BB	—	—	BB	BB
Brough	BB	BB	—	—	BB	BB
B.S.A.	TT	TT	—	—	BB	BB
Calcott	—	—	—	—	TT	TT
Calthorpe	BB	BB	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
Chater-Lea	BB	BB	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
Clyno	BB	BB	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
Connaught	TT	TT	—	—	TT	TT
Diamond (Villiers)	TT	TT	—	—	TT	TT
" (other models)	BB	BB	—	—	BB	BB
Dot	BB	BB	—	—	BB	BB
Douglas	BB	A	—	—	BB	A
Elswick	TT	TT	—	—	TT	TT
Enfield (J.A.P.)	BB	BB	—	—	BB	BB
" (other models)	TT	TT	—	—	TT	TT
Excelsior 2-stroke	TT	TT	—	—	TT	TT
" (other models)	BB	BB	—	—	BB	BB
Harley-Davidson	—	—	B	A	B	A
Haslewood	BB	BB	—	—	BB	BB
Henderson	—	—	A	A	A	A
Hobart (J.A.P.)	BB	BB	—	—	BB	BB
" (Villiers)	TT	TT	—	—	TT	TT
Humber	TT	TT	—	—	TT	TT
Indian	—	—	B	A	B	A
Ivy	—	—	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
James	BB	BB	—	—	BB	BB
" 2-stroke	BB	BB	—	—	TT	TT
J.E.S.	TT	TT	—	—	TT	TT
J.H. (Villiers)	TT	TT	—	—	TT	TT
" (other models)	BB	BB	—	—	BB	BB
Leo Francis	BB	BB	—	—	BB	BB
Levis	TT	TT	—	—	TT	TT
L.M.C.	BB	TT	—	—	BB	TT
Matchless	TT	TT	—	—	BB	BB
Mead (J.A.P.)	BB	BB	—	—	BB	BB
" (Precision)	TT	TT	—	—	TT	TT
New Hudson	TT	TT	—	—	TT	TT
New Imperial	BB	BB	—	—	BB	BB
Norton	TT	TT	—	—	TT	TT
N.U.T.	TT	TT	—	—	TT	TT
O.K. Junior	TT	TT	—	—	TT	TT
P. & M.	BB	BB	—	—	BB	BB
Page	B	A	B	A	B	A
Quadrant	—	—	—	—	BB	TT
Rex	BB	BB	—	—	TT	TT
Rex Jap	—	—	—	—	BB	BB
Raver	BB	BB	—	—	BB	TT
Royal Ruby	BB	BB	—	—	BB	BB
" 2-stroke	TT	TT	—	—	TT	TT
Rudge	BB	BB	—	—	B	TT
Scott	TT	TT	—	—	TT	TT
Singer	TT	TT	—	—	TT	TT
Sunbeam	TT	TT	—	—	BB	BB
Sun (J.A.P.)	—	—	—	—	BB	TT
" (other models)	—	—	—	—	TT	TT
Triumph	BB	BB	—	—	TT	TT
Vindec	—	—	—	—	TT	A
Williamson (water-cooled)	—	—	—	—	BB	BB
Wall (J.A.P.)	—	—	—	—	BB	BB
Zenith	BB	BB	A	—	BB	BB

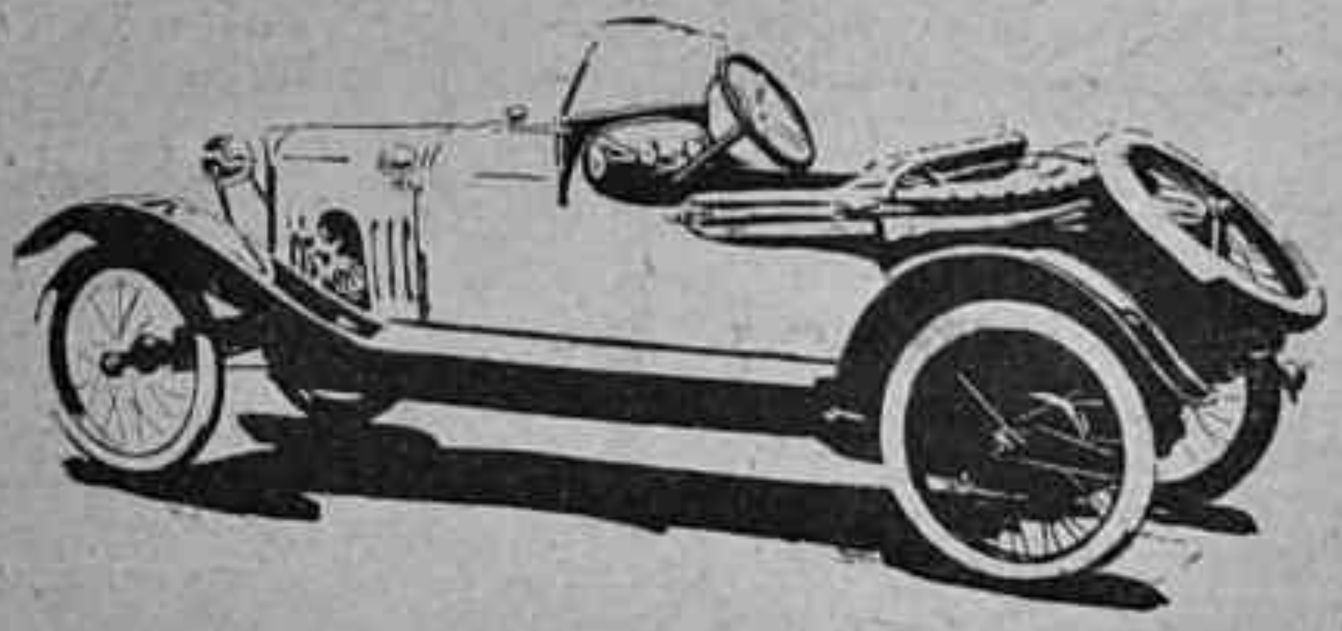
GN

The G N., with its full equipment, gives the luxurious comfort of the touring car with the speed and economy of the motorcycle combination. The special detachable wire wheels are all interchangeable, with a spare mounted at the rear of the car. The lighting dynamo is driven from the clutch-shaft, and the headlamp is mounted centrally, with electric side lamps on the scuttle. The hood fits close down over the top of the single screen, which is adjustable. The bodywork is comfortable and the pedals adjustable to suit drivers of different heights.

The Standard TOURING G.N. With detachable interchangeable wheels, but not equipped with accessories, approximately £140

Fully equipped with hood, screen, dynamo lighting set with head lamp, side and tail lamps, spare detachable wheel with tyre, horn, pump, tool kit, jack, and number plates, approximately £167 10

G.N. LIMITED, ETNA WORKS, ALBERT ROAD, HENDON, N.W.4



B2

LESSEN CAR EXPENSES AND PROLONG THE LIFE OF YOUR CAR. :: :: ::

"One result of the war will be a big increase in the number of Amateur Mechanics."

The following are the titles in the sub-section on "Overhauling a Motor" in "THE AMATEUR MECHANIC":—Summary and explanation—Preliminary examination, chiefly by sight—Bearings—Carburetter, couplings, etc.—Flywheel, clutchfork, etc.—Gauge gear—Steering gear, etc.—Frame springs—The earthtest—Testing the engines—Compression testing—Testing with the engine running—Worn bearings—"Knocking" "Pegging"—"Hunting"—Silencer at fault—Clutch—Change gear—Undue heating of circulation water—Lubrication—Testing on the road—Ignition—Valve timing—Defective compression—The shafts. "A COMPLETE OVERHAUL":—Testing for alignment—Swivel bearings—Wheel bearings—Tyres—Removing valve chamber covers—Grinding in valves—Removing the engines—Testing the truth of pistons—Removing flywheel—Timing gear—Magneto—Gudgeons and pins—Case hardening—Removing piston rings—Engine repairs—Testing bores of cylinder—Truing journals—Truing brasses—Bedding the crankshafts—Big-end bearings—Renewing clutch leather—Ball bearings—Gear renewing—Oiling axle springs—Aligning gearbox and engine—Re-assembling engine accessories—Brakes, etc. This article has 56 practical illustrations.

Fit up your Motorcycle with Electric Light.

Mr. LEONARD ROE, Leicester, writes:—

"I have mended my watch from instructions given in your 'Amateur Mechanic,' though it had not been going for 12 months. Now I am going to restore the colour of old brown boots. Your articles on 'Miniature Electric Lights' are very interesting to me, and already I have fitted up my cycle from these instructions.

"THE AMATEUR MECHANIC" teaches electrical jobbing. To instance only a few of the items in the index under, "Electric" and "Electricity," here they are:—How to fit electric bells—To add telephones to electric bells—Principles of electric bells—Electric bell push—Electric lamp holder—Metallic filament electric lamp—Electric lighting—Accumulators—Electric light for bedrooms—Electric cycle light Electric desk lamp—Electric light fittings Electric hand lamp—Electric lamp—Electric piano lights—Electric primary batteries—Electric reading lights—Electric switches—Electric wiring—Electric oscillations—Electric pole finders—Electric magnetic waves—Electric batteries—Electric buffing—Dynamo for electro—Electric connection for electro—Principles of the electro process, etc., etc.

It gives working directions on several trades.

"THE AMATEUR MECHANIC" teaches those money-saving arts which are invaluable to every citizen: Shoe-making; House Decoration; Boat-building; Picture-framing; Sign and Ticket Writing; and Repairing of Furniture, Bicycles, Typewriters, Windows, Spectacles, Mailcarts, and overhauling of Motorcars, etc., etc.

What a Craftsman says:

Mr. H. A. SMITH, Bermondsey, writes:—

"The volumes are very interesting, especially the metal-working details, which are described in a clear, business-like way. I think the work is worth double what you charge, considering the variety of trades dealt with."

What an Amateur says:

Mr. W. C. BOYLAN, Beech House, Dublin, writes:

"Any person wanting more information than is contained inside the pages of these four volumes has no business on this planet. In fact, without the letterpress, the photo. reproductions have shown me the error of my ways in the past, when I was trying to be my own mechanic."

The

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Teaches You to Clean Overhaul and Repair

MOTORS and MOTORCYCLES of every kind.

The

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It presents pages and pictures from the "Amateur Mechanic."

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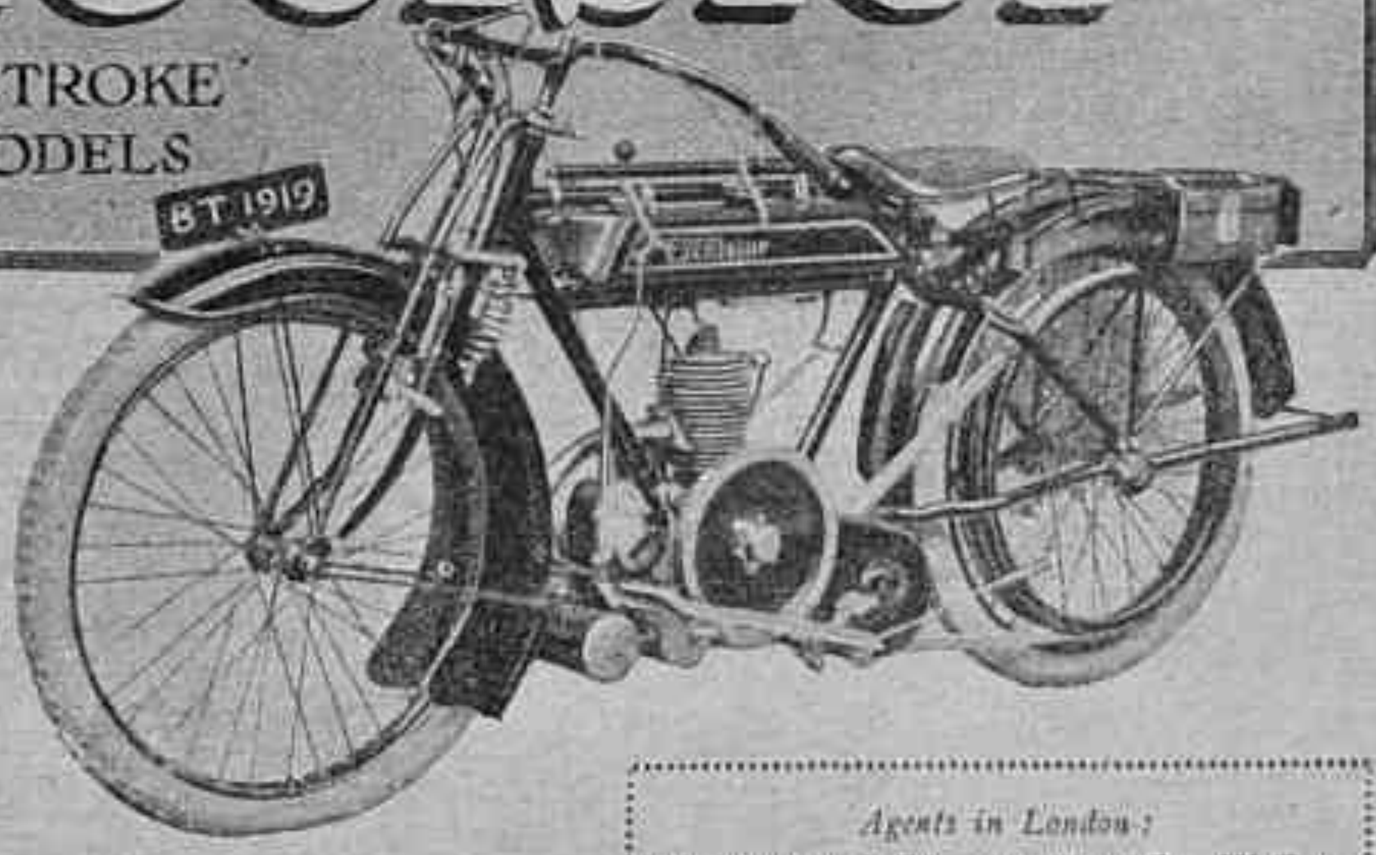
Gold Medal.

Light-Weight Scottish Speed Championship 20 Miles Race AND
Five Gold Medals, Six Silver Medals, Two Bronze Medals, Three Fuel Prizes
in the A.C.U. Trials.

THE PALMER TYRE, LTD., 119-123, Shaftesbury Avenue, W.C.2.
MOTORCYCLE TYRE DEPT.—103, ST. JOHN STREET, CLERKENWELL.

The British
"Excelsior"
TWO-STROKE MODELS



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Long Service
AND
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2½ h.p. Two-stroke model, with Villiers engine, Dunlop 26" x 2¼" tyres, Druid fork, "AMAC" Carburetter, etc. Listed at **£50 - 0 - 0**

A similar machine, with two-speed countershaft gear ... ... **£58 - 16 - 0**

A similar machine, with two-speed countershaft with clutch and kickstarter **£64-17-6**

Agents in London:
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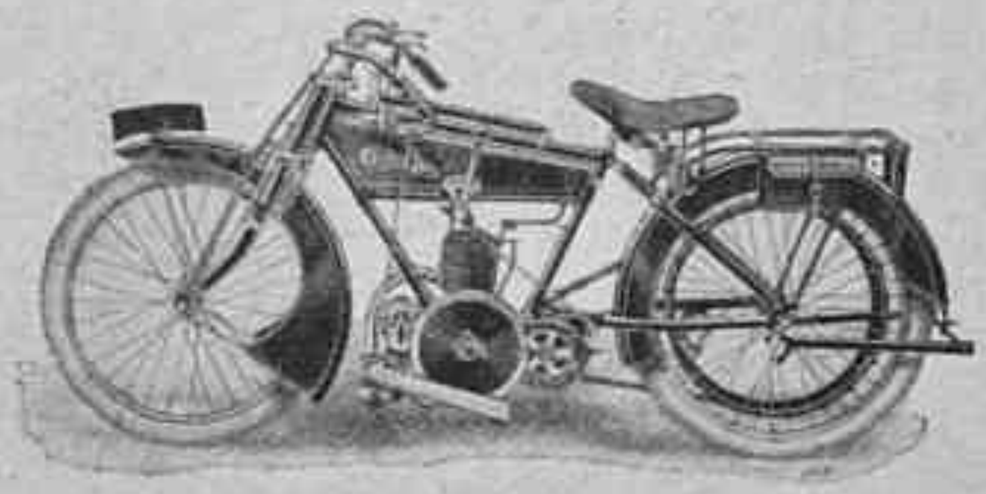
BAYLISS, THOMAS & Co., Ltd., (Founded in Coventry 1874) Excelsior Works, King's Road, TYSELEY——BIRMINGHAM.

DO NOT FORGET TO MENTION "MOTOR CYCLING." B5

Chater Lea

2 Stroke
2 Speed
—£60



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STOUTLY CONSTRUCTED.
LIGHT WEIGHT.
LOW RUNNING EXPENSES.

Design and Workmanship of Chater Lea Famous Quality.

WRITE FOR SPECIFICATION

We are now appointing Sole Agents for 1920.

Chater Lea Ltd., Banner Street, London — E.C.1.

B.D. B.D.

Motor Cycling Mishaps — LIABILITY TO THE PUBLIC

COMPENSATION in respect to injuries sustained by a third party, or damage to property, resulting from an accident, may involve the Motorcyclist in considerable expense, unless provided for.

Something of this sort may happen to you, however free of accidents you may have been in the past.

The "B.D." 1919 Empire Motor Cycle Policy (with or without sidecar) will cover you against such a loss by providing unlimited indemnity in respect of the liability of the Assured to the Public for injury to persons and property including all law costs incurred with the written consent of the Company. The same Policy covers, up to the full insured Value, damage to the Cycle, etc., by accidents such as above, also malicious damage, damage or loss in transit —by burglary, theft or fire, and provides for reasonable cost of conveyance to and from repairers.

A substantial bonus is allowed for no claims, and the policy may be extended to cover the accidental disablement or death of the owner.

Write at once for full particulars, and take out one of these policies BEFORE the accident happens.

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Provisional Awards :—

3 Gold Medals

1 SILVER & 1 BRONZE.

The following list shows the successful A.J.S. Competitors with the provisional list of awards.

E. W. Oldcroft,	*4 h.p. A.J.S.*	*GOLD MEDAL*
D. Wade,	*6 h.p. A.J.S.*	*GOLD MEDAL*
F. W. Giles,	*6 h.p. A.J.S.*	*GOLD MEDAL*
H. C. Heath,	*6 h.p. A.J.S.*	*SILVER MEDAL*
C. Collins,	*6 h.p. A.J.S.*	*BRONZE MEDAL*

Also at the Wolverhampton M.C.C. Open Hill Climb, held at Style Cop, 27th September, the A.J.S. again proved its merit.

14 AWARDS

6 Gold Medals

1 SILVER, 5 BRONZE, and 2 SPECIAL GOLD MEDALS.

None of the 2½ h.p. A.J.S. machines competing were of special design, yet they were successful in gaining the following places :—

6 FIRSTS, 8 SECONDS, 10 THIRDS, and also secured the "DIAMOND" and "A.J.S." Special Gold Medals for best amateur performance on formula of any machine up to 350 c.c. and best performance on formula of any amateur solo rider. These results are typical of the confidence and success enjoyed by private owners of A.J.S. products.

Our 1919 6 h.p. Combination is the last word in reliability and enduring satisfaction.

PRICES : 6 h.p. A.J.S. Combination, with Spare Wheel and Tyre, Windscreen, Stormproof Apron and Tools £158
Motorcycle only — — — £115 : 5 : 0

Write for particulars and latest Catalogue :—

A. J. STEVENS & CO. (1914), LTD.,
Graiseley House, WOLVERHAMPTON.
London Agents: H. Taylor & Co., Ltd., Store St. Tott. Court Rd

The A.C.U. Six Days Reliability Trial.

B.S.A

Secures Chief Award.

TEAM PRIZE

ALSO

THREE GOLD MEDALS

(F. W. Applebee H. F. Edwards F. Turvey)

TWO SILVER MEDALS

(W. J. Chambers L. L. Sealey)

ONE BRONZE MEDAL

(A. E. Wood)

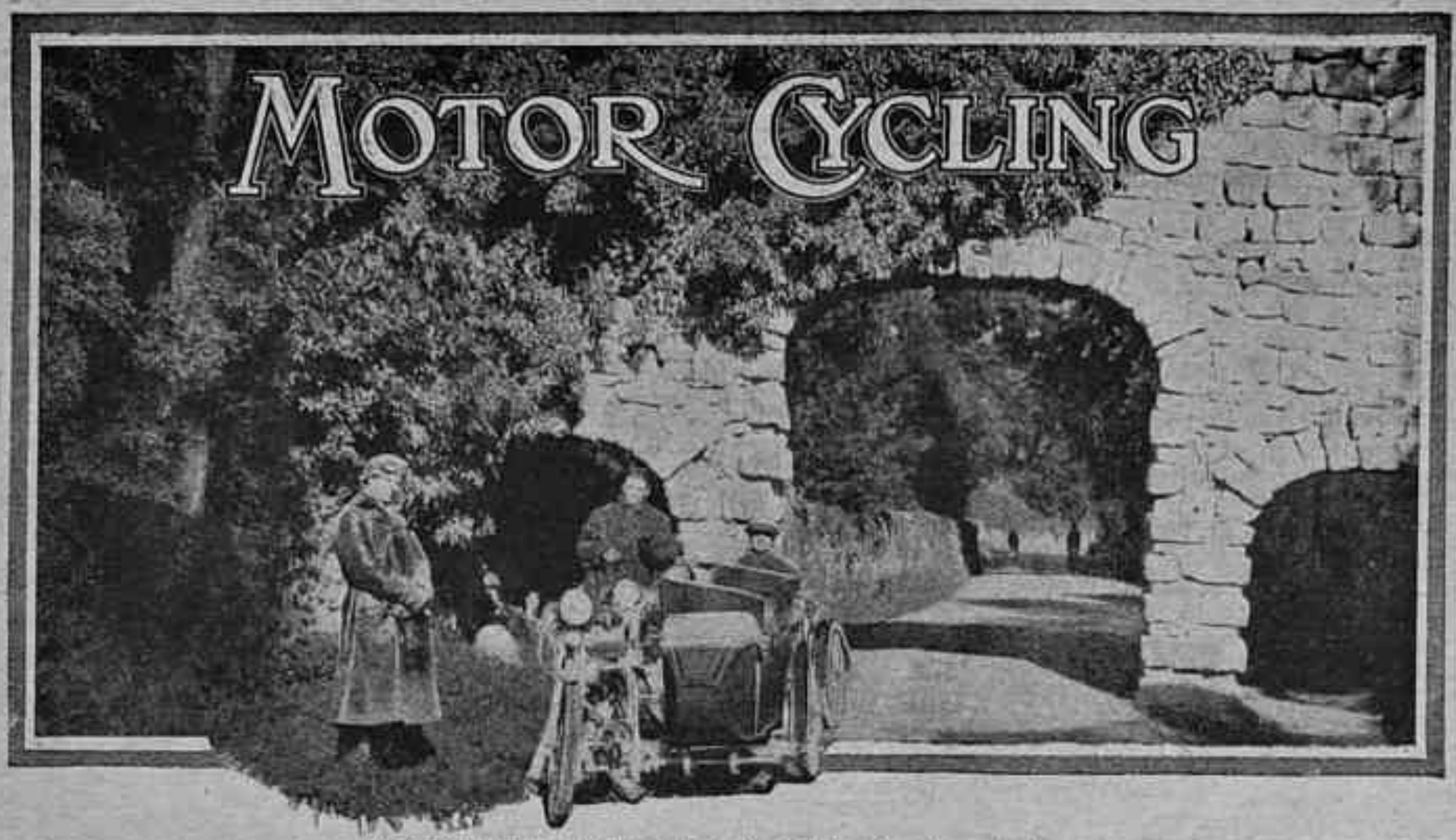
The B.S.A. Team (H. F. Edwards, L. L. Sealey and F. Turvey) obtained 557 marks out of a possible 600, and covered the exhaustive and difficult course in splendid style. The excellent conditions of the machines at the finish proves conclusively the sound construction and reliability of B.S.A. Motor Bicycles.

F. Turvey and H. F. Edwards gained 191 out of 200, *the HIGHEST TOTAL made by any rider in the Trial.*

B.S.A
MOTOR
BICYCLES

The Birmingham Small Arms Company Ltd.,
SMALL HEATH, BIRMINGHAM

VOL. XX. No. 518. October 15, 1919.



A wayside halt during the A.A. 5,000-mile Benzole test.

ARE WE SUFFERING FROM A MULTIPLICITY OF CLUBS?

Some Alterations Likely in the Midlands.

IT has for long been suggested that where two or more motorcycling clubs cover the same ground there is a multiplicity of trials and club runs, which results in a great deal of wasted effort. Amalgamation of the clubs has been pointed out before as a remedy which would possess certain advantages. At the present time there seems a decided need for some such scheme, owing to the action of the A.-C.U. in announcing that only 20 permits for open trials will be allotted to the various districts next year.

Trouble Threatening for Next Season.

If club life continues on the present independent principle it is easy to forecast what will happen during next year. The Midland district, which is admittedly the most progressive as regards clubs, may have, say, four open trial permits allotted to it, which will then be balloted for by all the clubs in that district. Amongst Midland clubs we have the Birmingham M.C.C., the Sutton Coldfield and Mid-Warwickshire A.C., the Coventry and Warwickshire M.C., the Wolverhampton M.C.C., the Redditch M.C.C., and smaller clubs such as the North Birmingham A.C., South Birmingham M.C.C., etc., etc. Obviously the large clubs, which have been used to holding two or three open events during the year, will feel very aggrieved if the ballot proves unlucky for them. In this they will be justified, for they have done much to popularize the pastime and have put in much spade work, which should at least meet with recognition. In place of encouragement they are threatened with discouragement, for many club members only join for the sport which is offered and if this, in the shape of open events, is not forthcoming their membership is likely to cease. Hence the clubs which are not lucky enough to secure an open permit will suffer in membership. This is hard on one and all, on the big, flourishing clubs which have done so much good work, and on the younger and smaller clubs which are struggling into prominence and deserve every encouragement.

The Question Being Considered.

At the present time a meeting is being arranged to consider the advisability of amalgamation. There are some who favour a complete merging of the clubs into one large and powerful whole, with a pooling of committees and officials, also of all revenues, prize funds, etc. Others favour an amalgamation for open events only, the various clubs retaining their identities but electing an Open Events Trials Committee to deal with the permits allotted to the district by the A.-C.U. There is much to be said for each proposition and not unnaturally there are drawbacks to each. If one large club is formed its influence should be considerable and its resources also would be great. The membership would not, however, be the sum total of the membership of the existing clubs, for many keen sportsmen belong to two or three of the existing clubs. There would, however, be no wasted effort, as under the present system new members should be more readily attracted to one large club. Closed club events could then be expected to assume the importance of the M.C.C.'s London-Edinburgh run, instead of being restricted to a mere 40 entries or so by reason of the holding of competitive events by other clubs on the same date. The smaller clubs would undoubtedly gain by such amalgamation and it is difficult to see where the large clubs would suffer, except in losing their identity.

Are We Suffering from a Multiplicity of Clubs? (contd.).

This is the real reason underlying the proposal for an amalgamated trials committee only; the supporters of the larger clubs do not wish to see the labours of some years and the historical identities of the clubs merged into one and thus lost sight of individually. It is largely a sentimental objection, but, nevertheless, it deserves consideration. There does not seem any objection to trying this proposal before adopting the more drastic one. It should afford sufficient data to show whether the more drastic complete amalgamation would be sufficiently successful to be worth while.

One important aspect of either scheme is that amalgamation of the social committees should make possible the much-talked-of club house. This has often been suggested in these pages, but has never materialized, although had not the war intervened it might now be un fait accompli. The desirability of a social club offering garage facilities, feeding, living, and amusement facilities, cannot be questioned, but the practicability is sometimes called into question. One of the greatest arguments against it is given as the varied social standing of motorcyclists. This is equally true of car owners, but it has not prevented the R.A.C. from being a success. If the question were tackled on a sufficiently large scale it could be made a success from a social point of view, but whether it could be financed by the clubs on this large scale is doubtful. If it can be done at all the Midlands is undoubtedly the most suitable place. The greatest activity in club life is found there, and it is the most convenient centre for the rest of England. It is also the centre of the motorcycle trade, and a certain amount of help would doubtless be forthcoming from this quarter. This, however, is looking rather too far ahead. At present the amalgamation is but talked of, although an important meeting of club officials is likely to be held in the immediate future. Birmingham clubs have already held a meeting for a discussion on the subject. A.G.D.C.

MOTOR CYCLING NEWS FROM DENMARK.

Much Enthusiasm But Poor Supplies.

(From Our Danish Correspondent.)

INCREASED income in the form of new taxes is as badly wanted by the Danish Chancellor as elsewhere, and with regard to motoring the new proposals take the form of a suggested tax on horse-power, as well as increased import duties. These proposals are not going unchallenged by the motoring fraternity, and a great Protest Rally, attended by 700 motorists, was organized on the lines of a *Motor Cycling* Gipsy Club's gathering.

Sunbeams Popular.

As in every other country, the demand for motorcycles far exceeds the supply, and the practice of premiums for places on waiting lists is current, particularly in regard to the 100 Sunbeam machines allotted to the Scandinavian agent.

On August 23rd and 24th the first speed trials were held on the Danish island of Fanoe, and proved sufficiently successful to be inaugurated as an annual event. The fastest time was made by a Harley-Davidson, which covered the kilometre in 25⅘ secs. In the 500 c.c. class a 3½ h.p. Norton was first in 46⅘ secs., whilst a 4½ h.p. B.S.A. was successful in carrying off the 650 c.c. class in 49 secs.

To Popularize the Pastime.

It is proposed shortly to hold a road race through Denmark, Norway and Sweden, with halts at the respective capitals.

Quite an up-to-date collision occurred recently between a former enthusiastic Rover rider, who now owns a stud of aeroplanes, on one of which, whilst landing in Sweden, he ran into a motorcycle. No damage was done to either beyond the breaking of the motorcycle's handlebars.

The New Hudson agent has introduced into Denmark the utility sidecar, and has supplied three to the "Magasin du Nord," the Copenhagen Selfridge. A rival firm has now imitated this example with a fleet of Hendersons, and the municipal electricity works employs three Indian combinations.

A Danish "Four."

Only one make of motorcycle has hitherto been made in Denmark, the Anglo-Dane, which has been produced in limited quantities since 1911. Now, however, a four-cylinder machine has made its appearance, by name the Nimleus, and has performed well in competitions this year. It is manufactured by a well-known vacuum-cleaner concern, and there is a prospect of it being turned out in sufficient quantities to allow of export.

Dangerous Cross Roads.

A correspondent informs us that several bad accidents have recently occurred at the junction of the Uxbridge Road and the Harrow Road, at the foot of Peterborough Hill. The Uxbridge Road is blind to anyone travelling along the Peterborough Road, and our correspondent, who was involved in a nasty accident at this spot, suggests that the A.A. would be doing a very great service by placing one of their patrols on duty there.

A Danish motorcycle delivery outfit.

PRECISIONS BREAK AWAY FROM THE ORTHODOX.

Their Complete Motorcycle Incorporates Many Unconventional Features

MESSRS. F. E. BAKER, Ltd., of King's Norton, famous as the makers of the Precision engine, in deciding to market a complete motorbicycle have broken away from conventional design and have evolved an entirely original type.

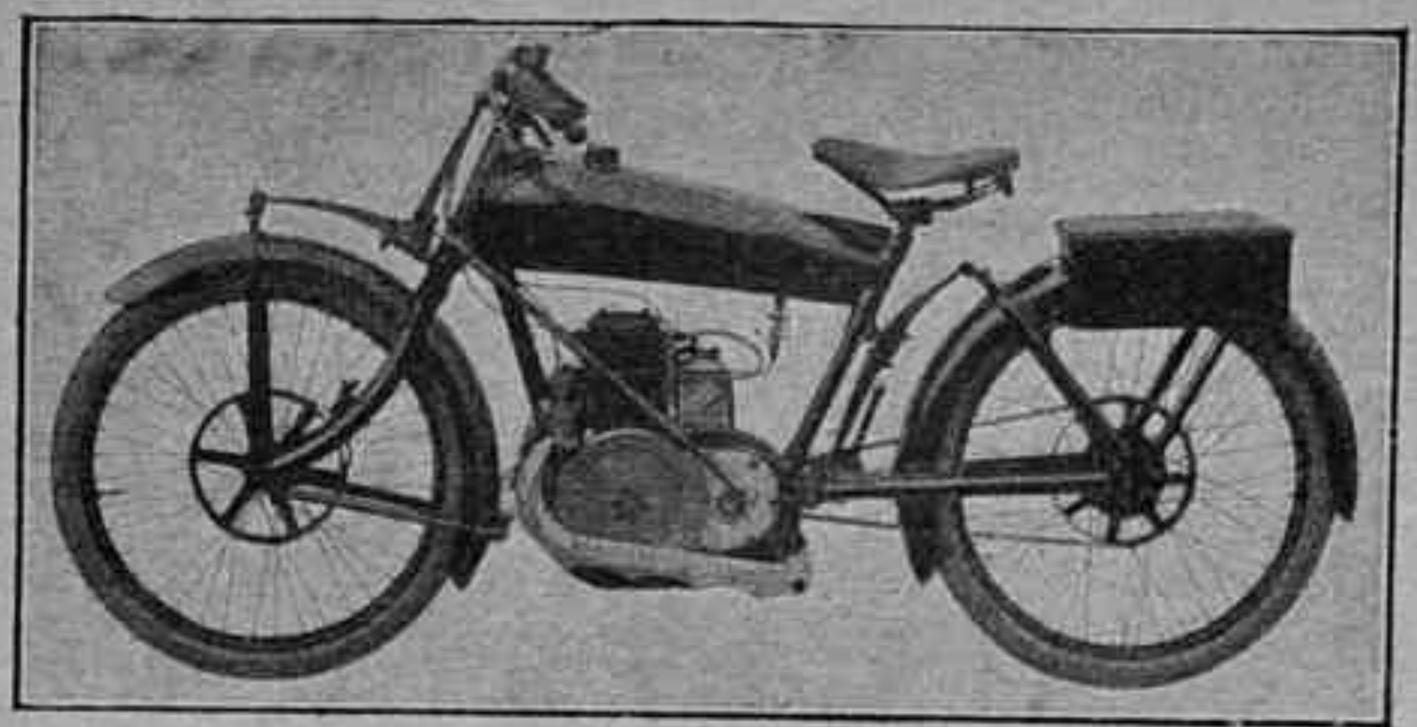
Pressed-steel Construction Partially Utilized.

A great deal has been talked about the possibilities of the pressed-steel frame for motorcycles, but so far we do not think a machine embodying the principle has been actually placed on the market. Messrs. Baker, whilst not adopting this construction for the whole frame, have gone one step towards it by employing a pressed-steel tank, which forms the horizontal member of the frame, as well as head and seat-tube lugs. The two halves are welded together, steel tubes being placed between to form the frame lugs proper, and the remainder of the frame is brazed up in the ordinary way. The result is a very stiff frame, weighing considerably less than one of the ordinary tubular construction with separate tank.

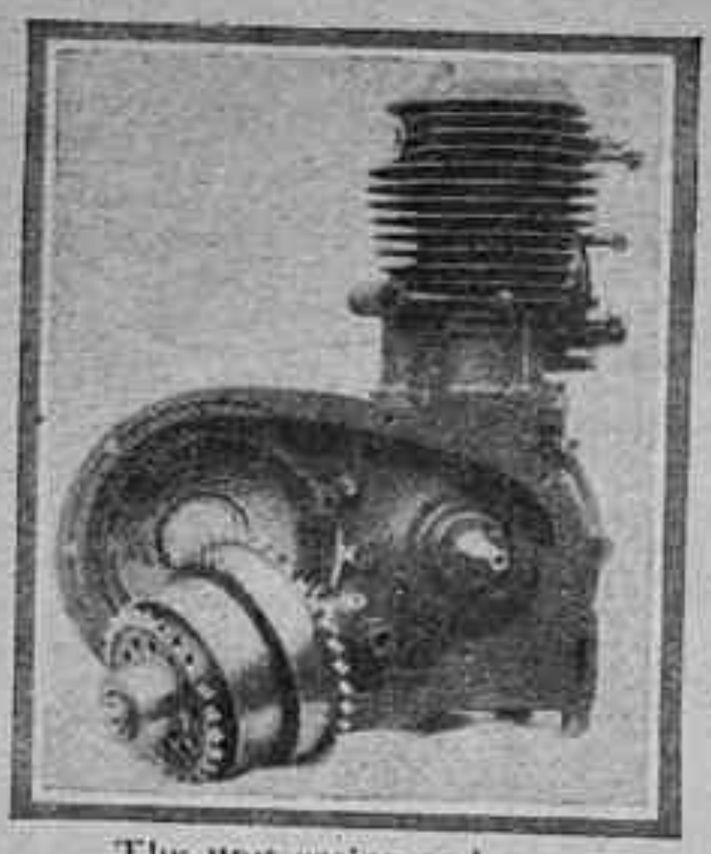
No doubt the success and popularity of this construction will be carefully watched by many people besides those actually responsible for the present production, for it must be obvious that a large number of the components of the usual frame and tank assembly are saved, and numerous small fittings dispensed with, a consummation greatly to be desired by any manufacturer. In the machine under review the tank is used solely for containing the petrol, so that no partition is necessary.

Much Originality Employed.

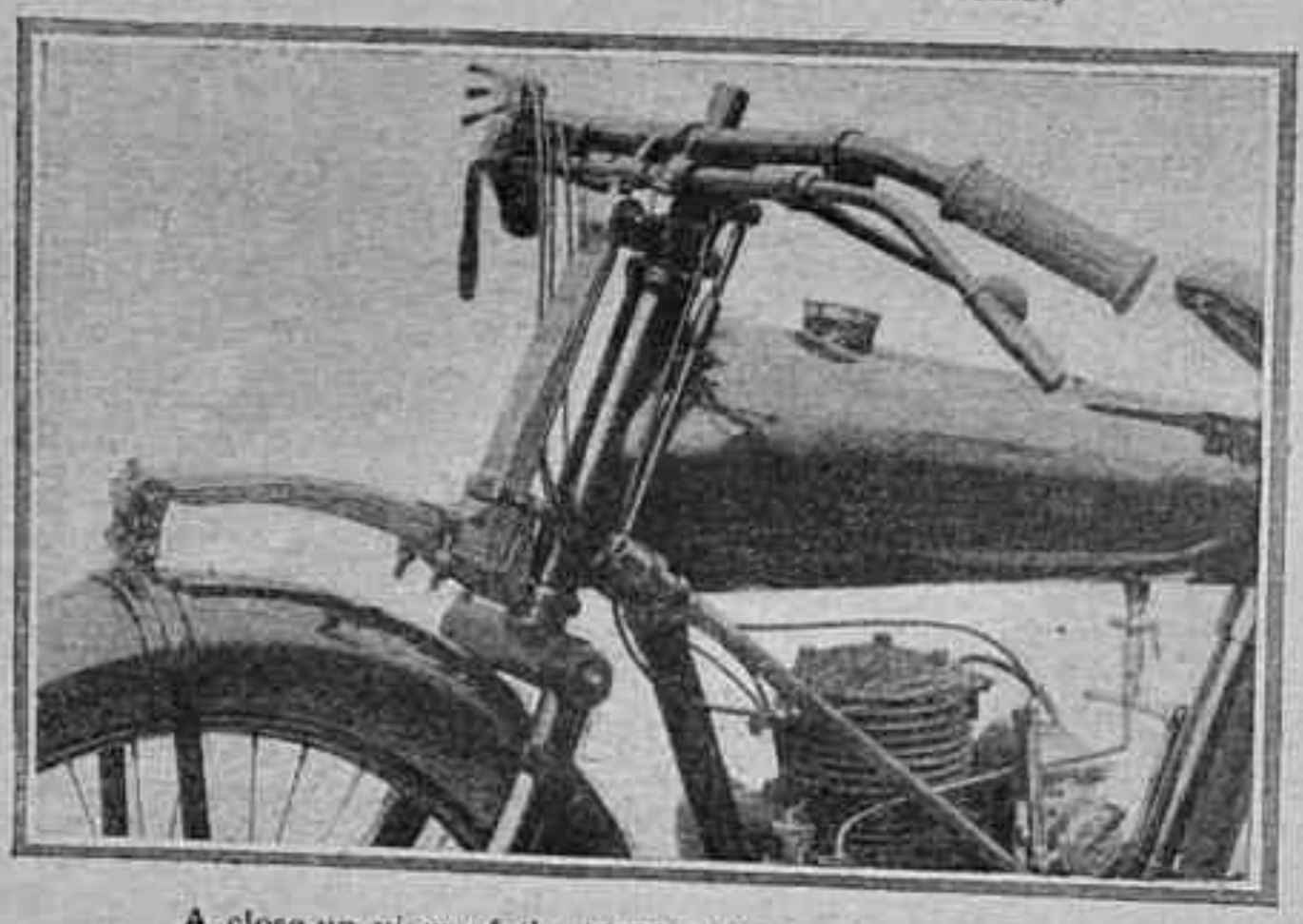
But not only in frame construction does the Precision machine depart from standard practice. The engine and gear are assembled as one unit, and also both front and back wheels are sprung.



Near side view of the complete machine.



The unit casing and gear assembly.



A close-up view of the highly-efficient front springing.

The rear portion of the frame is pivoted on ball bearings at the bottom of the seat tube, and is sprung by means of a vertical cantilever leaf spring, as will be readily seen from the illustrations. Here we might mention that both mudguards are pressed out of 18-gauge sheet steel, and, being firmly riveted to the frame, serve to stiffen both front and rear triangulations.

A Novel Type of Springing.

The difficulties surrounding the use of a true cantilever spring on the front fork have been ingeniously overcome by bisecting the leaves and by placing the halves at right-angles to one another in the pivoted cradle. The method is so clearly shown in the illustrations as to need no detailed description. Suffice it to say that from a personal test on the road we found both front and rear suspensions to be extremely comfortable.

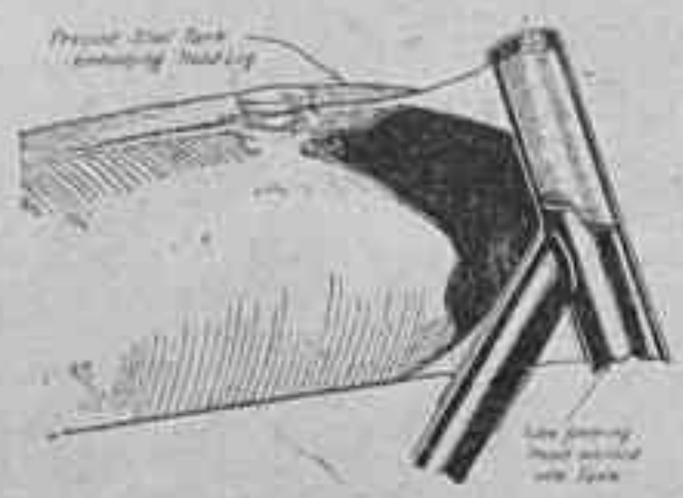
As regards other frame details, the rear carrier consists of a metal box welded on the mudguard, and encloses two smaller boxes, which contain the tools and spares. The back wheel is held in two sliding plates, which form the chain adjusters, so that when the wheel is removed the chain adjustment is not lost. The footboards shown in the illustrations are not the standard ones; they will be continued higher up at the front in order to protect the rider's legs.

Description of the Power Unit.

Coming now to the power plant. The engine is of the single-cylinder two-stroke pattern which forms the standard Precision product. Of 74 mm. bore and 81 mm. stroke, it has a cubic capacity of 350 c.c. and is rated at 3½ h.p. The big end is carried on roller bearings, and the method of fitting the rollers to the one-piece crankshaft will be easily understood by reference to the sketch. The connecting rod is introduced over the small portion of the crankshaft, the rollers are placed in position, and the cages are then riveted into place. The small end works in phosphor-bronze bushes in the piston bosses, the gudgeon pin being fixed to the connecting rod.

Precisions Break Away (contd.).

The engine and gearbox form one unit and are enclosed in a common casing. The gears operate on the same principle as those of the Enfield or Scott. Two speeds are provided, and are obtained by means of two countershaft sprockets of different sizes, which are each driven by a separate chain from the engine. By the use of expanding wedge bars it is



The tank and head construction.

possible to lock either of these sprockets to the countershaft, which drives the rear wheel through another chain. Between these two sprockets and fixed to the countershaft a drum forming one member of a contracting hand brake is placed operated by a pedal over the offside footboard. This countershaft brake takes the place of the conventional rear wheel brake. All this gear and brake assembly is enclosed in the unit casing, which is filled with engine lubricating oil to a level indicated on a sight gauge, through a filler cap situated at the top of the magneto chaincase. Thus we have a sump in which the chains, gear mechanism, and brake are continually immersed.

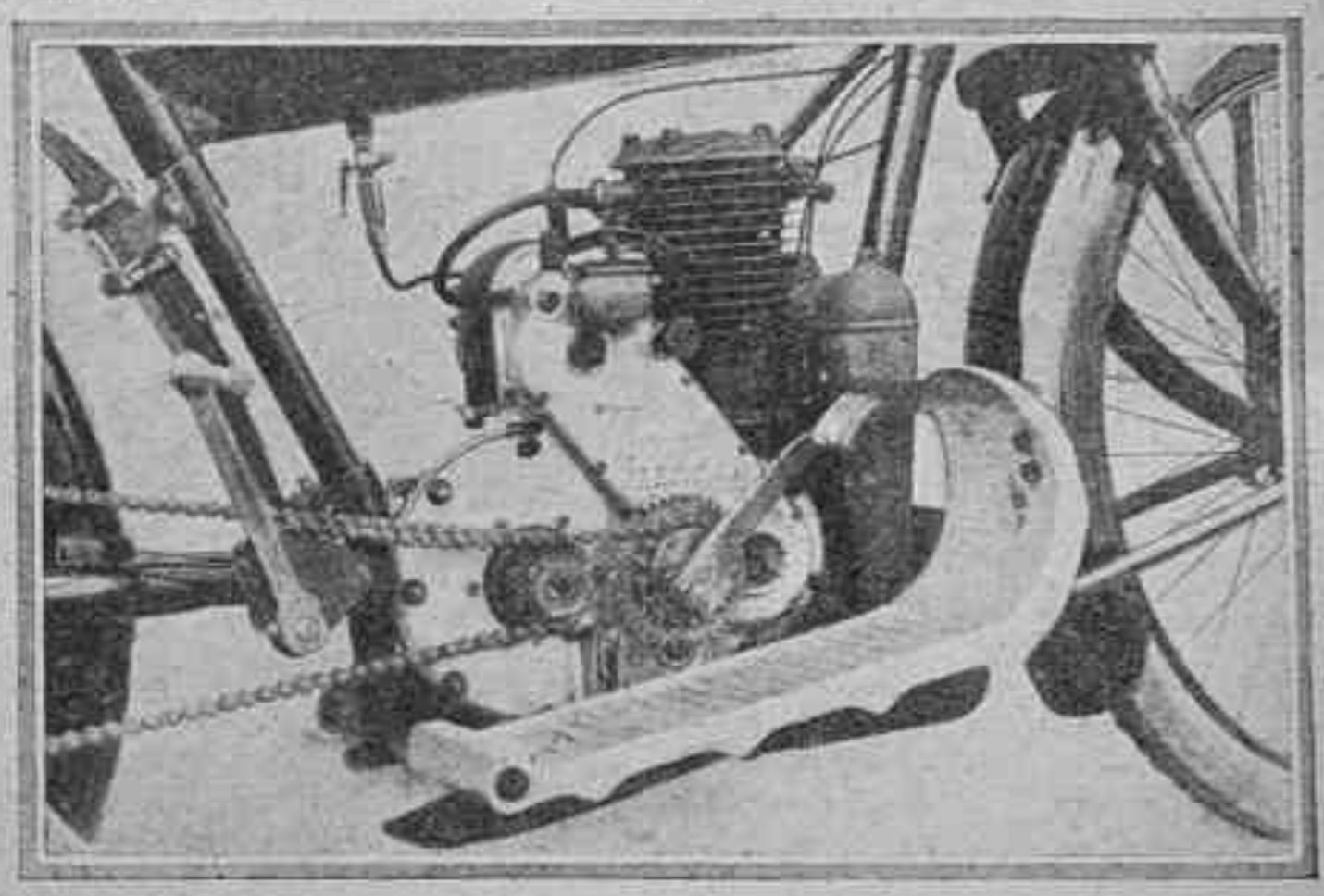
How the Lubrication System Works.

The method of lubricating the engine from this sump is decidedly ingenious. As the magneto chain dips into the oil it carries up with it a considerable amount of lubricant, which, as the chain reverses its direction over the top sprocket, is thrown off and runs down a special duct which conveys it to the cylinder at the lowest point of the gudgeon pin's travel. Messrs. Baker informed us that it is possible to get so much oil into the engine by this means that they have found it necessary to fit a needle valve to regulate the amount admitted. The disc operating this needle valve is visible in the photographs just at the side of the oil filler cap, and each filling of the sump is sufficient for 500 miles lubrication of engine and gears.

The Kick-starter Operation.

A kick-starter is fitted just behind the offside footboard, and operates through a chain to a large gearwheel mounted on the unit casing. This wheel meshes with a small ratchet wheel placed on an extension of the engine shaft, and so revolves the engine when the starter pedal is depressed.

The only Bowden cables used on the machine are those which form the carburetter and magneto controls. The compression release and front brake are operated by means of rods from roller levers on the handlebar. The front brake is of



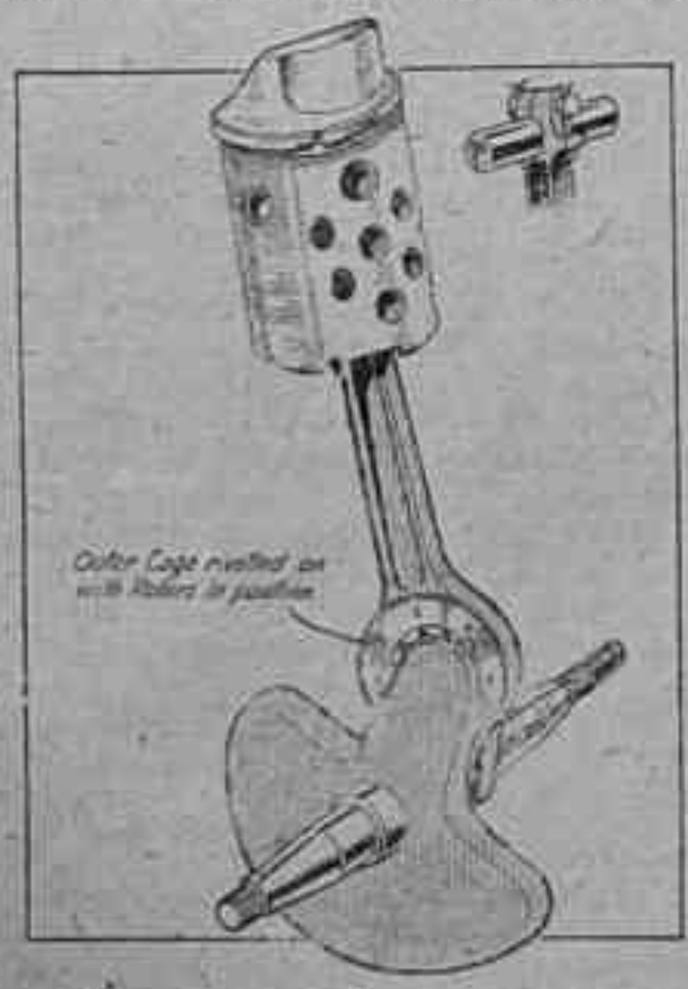
The operation of the starter can be gathered from this view.

the external contracting pattern, the drum being of large diameter. The gears and clutch are worked by one lever situated on the handlebar, it being merely necessary to raise or depress the lever in order to obtain high or low gear, the middle position giving free engine.

A Cushion Drive.

The transmission is by ½ in. by ¼ in. roller chain throughout. To absorb any engine snatch a slipping clutch device is incorporated in the countershaft, which can be adjusted to give any degree of slip, and the Enfield rubber shock absorber is fitted to the back wheel sprocket. These, in conjunction with the even torque of the two-stroke engine, ensure a remarkably sweet drive. A guard will be provided for the driving chain on the standard machine, also a rear wheel stand will be fitted, neither of which are shown in the illustrations.

Messrs F. E. Baker informed us that they intend this model to be regarded as a solo machine. As such it has attained a speed of 56 m.p.h., and has averaged 53 m.p.h. on certain test runs. The standard gears will be 5 and 10 to 1, and the weight about 230 lb. The price has not yet been definitely fixed. Deliveries in limited quantities are to commence in January next.



The piston and connecting rod assembly.

B12

Liverpool Motorcycle Traders.

ON a recent visit to Liverpool we noticed that Bold Street, locally known as "Motorcycle Agents' Street," is having another addition to the traders there, as the premises to be occupied by Messrs. Blake and Co., at Nos. 110 and 112 were showing signs of early occupation. Owing to having these commodious premises, this concern is open to take further agencies, and any manufacturer interested should communicate with them at 20-22, Rodney Street, Liverpool. Another addition to the motorcycle trade in the city is the Ansonia Motor Co., an offshoot of John Ansonia and Co., Ltd., City Motor Garage, 12 and 14, Norton Street, London Road, who anticipate opening new showrooms in one of the main thoroughfares at an early date. They are interested in the Metro-Tyler, the Black Prince, and are agents for other well-known makes.

New Hudson Directors' Meeting.

AT a meeting of the directors of the New Hudson Cycle Co. last week it was decided to recommend a dividend for the past year on the ordinary shares of 10 per cent., free of tax, together with a bonus of 1s. per share, free of tax. It was also decided to submit to the shareholders at the annual meeting resolutions adopting new articles of association, embodying the increase of company's capital to £250,000, and the alteration of the name to New Hudson, Ltd. On the passing of these resolutions the directors will recommend an issue to the ordinary shareholders on the register on September 18th of one new ordinary share for every two now held, at the price of 25s. a share.

THE LATEST DESIGNS.

THE 4 h.p. COULSON B.

A Model Eminently Suitable for Sidecar Work.

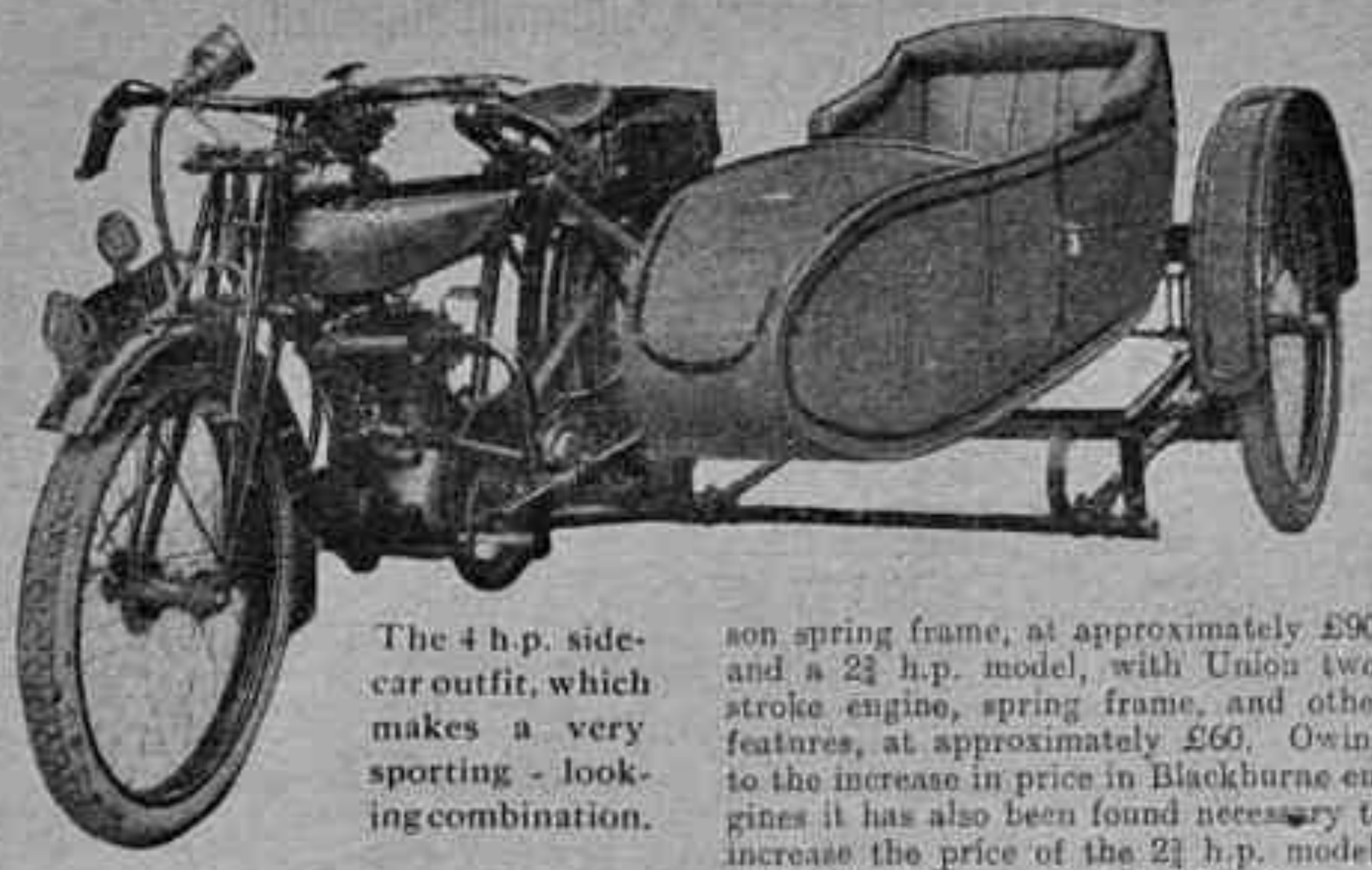
WE recently examined a new model Coulson B, which it is expected will be placed on the market early next year. This particular machine had been built to a special order, but as a result of the large number of requests for similar machines from people who have seen it, Messrs. F. Aslett Coulson Engineering Co., of Albion Works, Albion Street, King's Cross, have decided to start production of it as a regular model.

Blackburne Engine Retained.

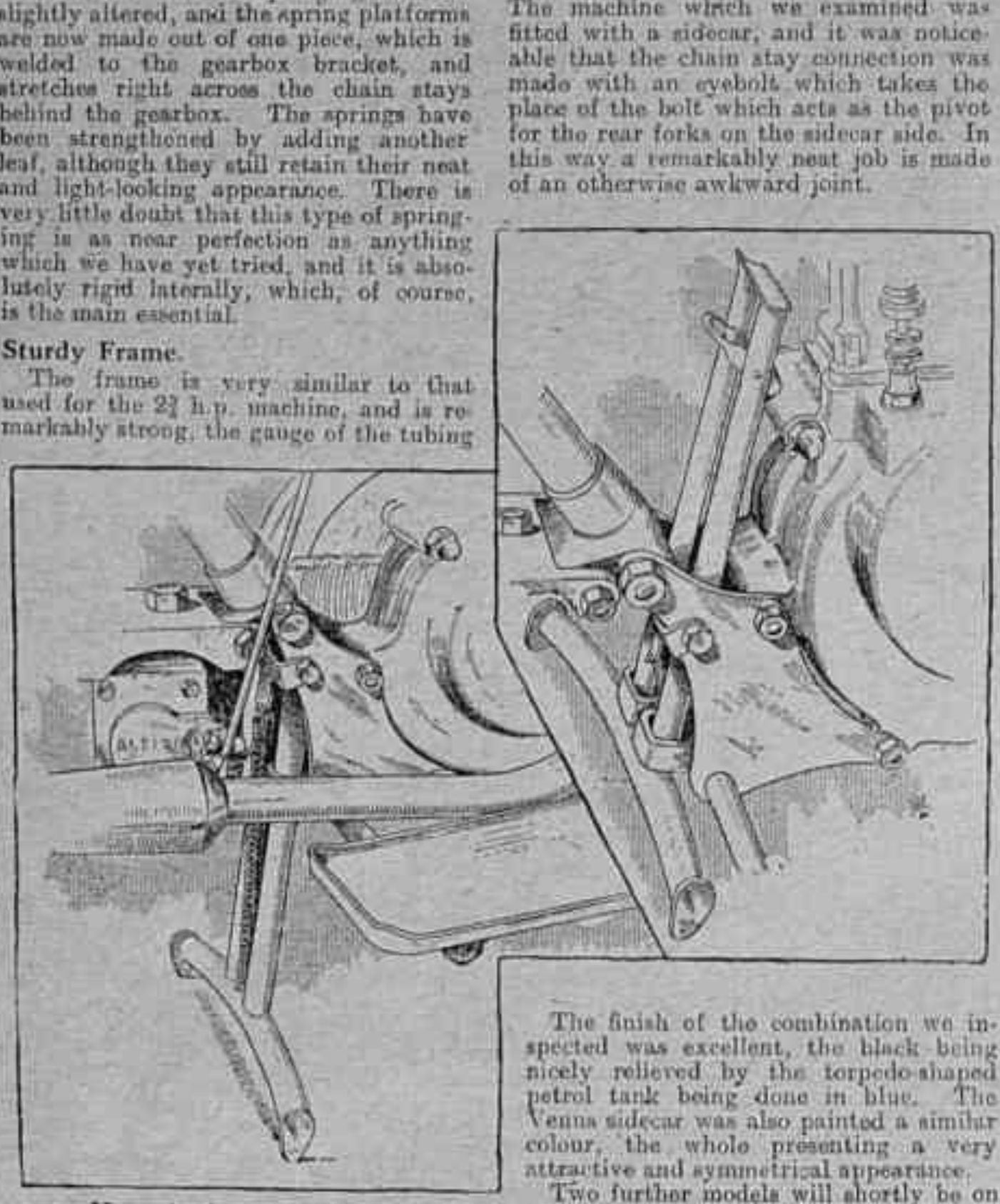
In general there is very little difference from the 2¾ h.p. model, which has already obtained a good name for itself on the British market. The engine is a 4 h.p. Blackburne, and as the makers wished to make it suitable for sidecar work they have fitted a Sturmey-Archer gearbox, which incorporates a clutch and kick-starter. The rear springing has been slightly altered, and the spring platforms are now made out of one piece, which is welded to the gearbox bracket, and stretches right across the chain stays behind the gearbox. The springs have been strengthened by adding another leaf, although they still retain their neat and light-looking appearance. There is very little doubt that this type of springing is as near perfection as anything which we have yet tried, and it is absolutely rigid laterally, which, of course, is the main essential.

Sturdy Frame.

The frame is very similar to that used for the 2¾ h.p. machine, and is remarkably strong, the gauge of the tubing being considerably heavier than that in ordinary use. No doubt this will also add a great deal to the remarkable lateral rigidity which we mentioned previously in connection with the rear springing. The machine which we examined was fitted with a sidecar, and it was noticeable that the chain stay connection was made with an eyebolt which takes the place of the bolt which acts as the pivot for the rear forks on the sidecar side. In this way a remarkably neat job is made of an otherwise awkward joint.



The 4 h.p. sidecar outfit, which makes a very sporting-looking combination.



How the latest Coulson stand is actuated.

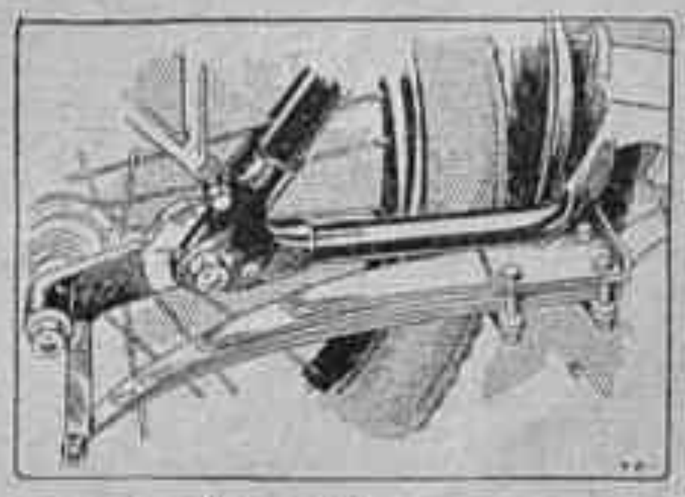
The finish of the combination we inspected was excellent, the black being nicely relieved by the torpedo-shaped petrol tank being done in blue. The Venna sidecar was also painted a similar colour, the whole presenting a very attractive and symmetrical appearance.

Two further models will shortly be on offer, viz., a 4 h.p. single-gear sporting model, with Blackburne engine and Coulson spring frame, at approximately £90, and a 2¾ h.p. model, with Union two-stroke engine, spring frame, and other features, at approximately £60. Owing to the increase in price in Blackburne engines it has also been found necessary to increase the price of the 2¾ h.p. model, with Blackburne engine, to 85 guineas.

A very neat new type of stand has been designed with which all machines turned out in the near future will be fitted. This is situated beneath the bottom bracket, and when not in use is practically unnoticeable. It is constructed of tubing welded at the joints. A bent piece forms the base, and to this are welded two upright pieces, which have a rounded section of steel attached to them at the top. These uprights are only just wide enough to pass between the two engine bearer plates and work in two guides near the base of the engine crankcase.

How the New Stand Operates.

When in operation the top of the stand rests under the bottom bracket, and the position is so arranged that the machine is practically balanced on it. The portion of the machine in front of the stand, however, is slightly heavier, but if the front wheel has to be removed the rear wheel will then rest on the ground, so that the machine is always stable when a wheel is out. To take the machine off the stand the rear is slightly lifted and moved forward; the stand is then pulled up into a normal position by a spring. To secure the stand from rattling a small clip is fixed near the top, and this can be wedged against the topmost lug of the crankcase.

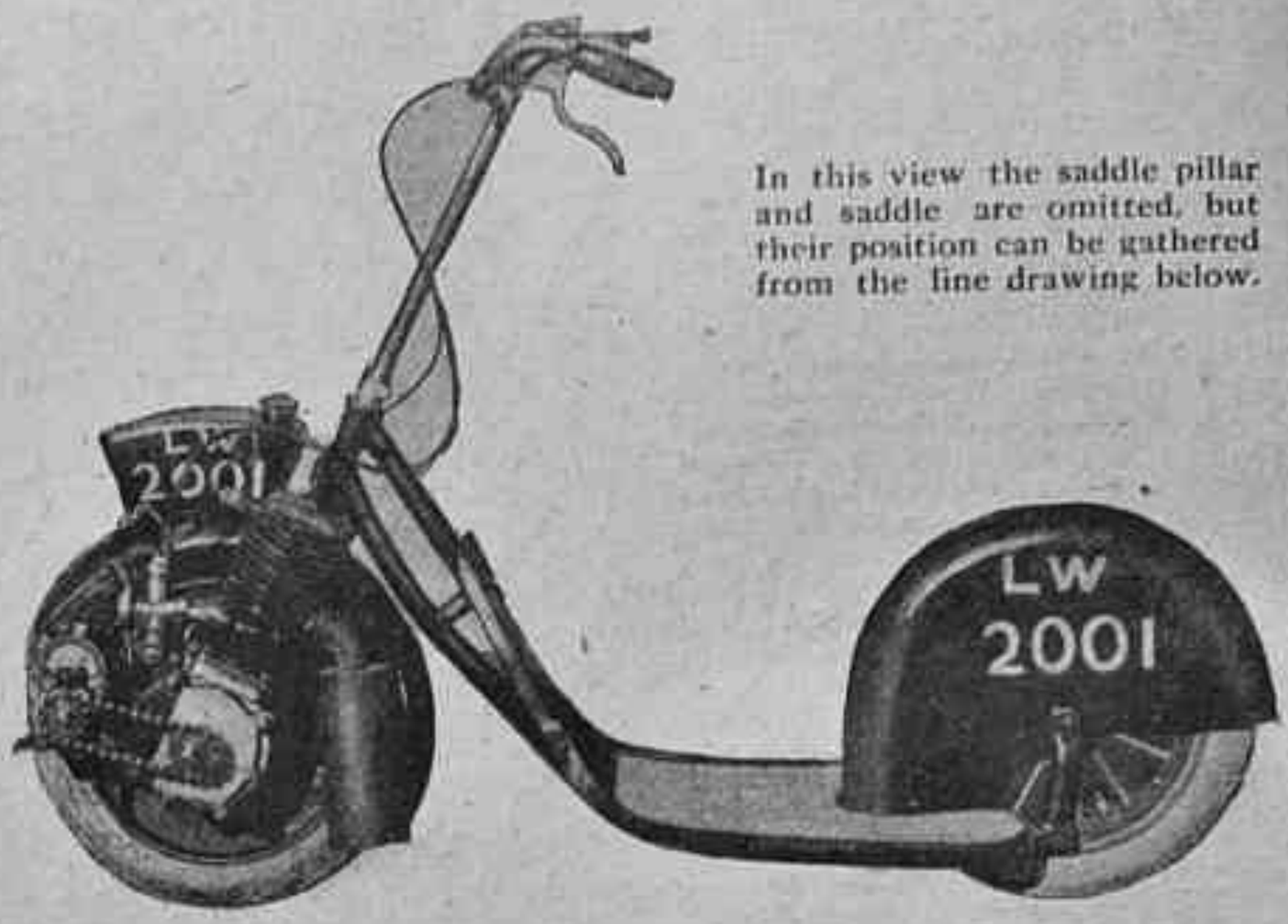


Details of the new rear springing.

THE HANDY SCOOTER.

Underslung Frame—2 h.p. Two-stroke Engine—Gear Drive.

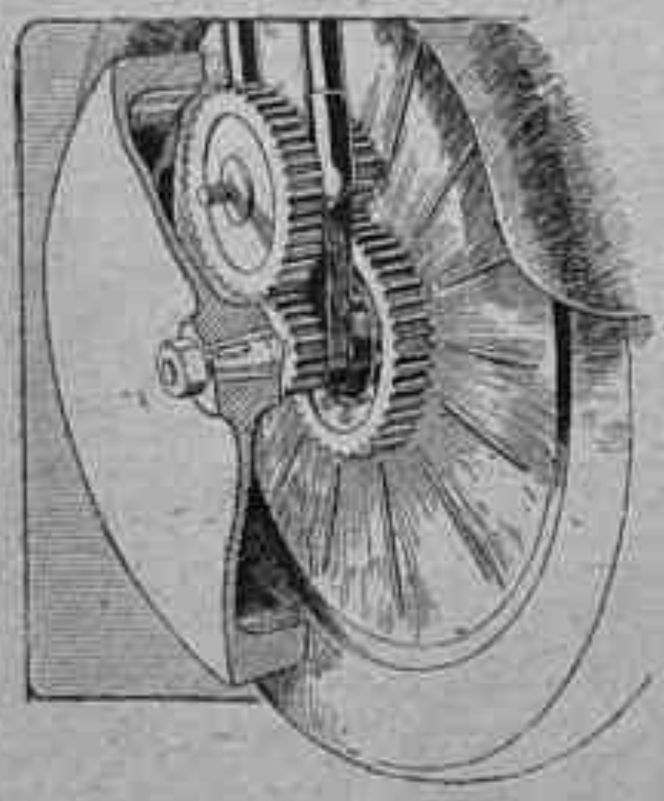
THE Handy motor scooter is the production of an experimental engineer, Mr. Leopold Ward, B.Sc. (Lond.), Harmood Place, Chalk Farm, London, N.W.1, at whose works we spent a very interesting hour or two recently. As will be seen from the illustration, the machine is of pleasing appearance, and probably represents the high-water mark of simplicity and compactness.



In this view the saddle pillar and saddle are omitted, but their position can be gathered from the line drawing below.

Novel Type of Frame.

The frame is a simple structure formed of two parallel tubes upswept at the forward end, where they are brazed to the steering head. The sheet steel platform is attached to this frame, providing plenty of room without projections to catch the rider's feet when dismounting. A very low centre of gravity is obtained by carrying the back wheel in two vertical supports brazed to the rear end of the frame, easy detachment of the back



The method of drive on the Handy scooter.

wheel being provided for by a knock-out spindle, which allowed of wheel removal without disturbing the adjustment of the bearings. A substantial sheet-metal guard completely encloses the back wheel, which effectually shields the rider from mud.

How the Drive Operates.

The front wheel is a complete power and transmission unit, the drive following the lines of the well-known "back gear" of a lathe. The engine main shaft is extended and passes through a fixed bush held in the fork ends, terminating in a taper on which is bolted the flywheel; the drive is through a pinion carried on a splined portion of the shaft between the flywheel and the fork ends, to a larger pinion which is on the outer end of a countershaft running on roller bearings in a housing carried between the fork blades. On the inner end of this countershaft is a smaller pinion, which meshes with a gear ring attached to the hub proper. The method is exceedingly neat, and provides a reduction of 7 to 1, which, with the 16 in. by 2½ in. wheels fitted, gives easy starting and good hill-climbing capacity. The speed works out at about 25 m.p.h. at 3,000 r.p.m. of the engine.

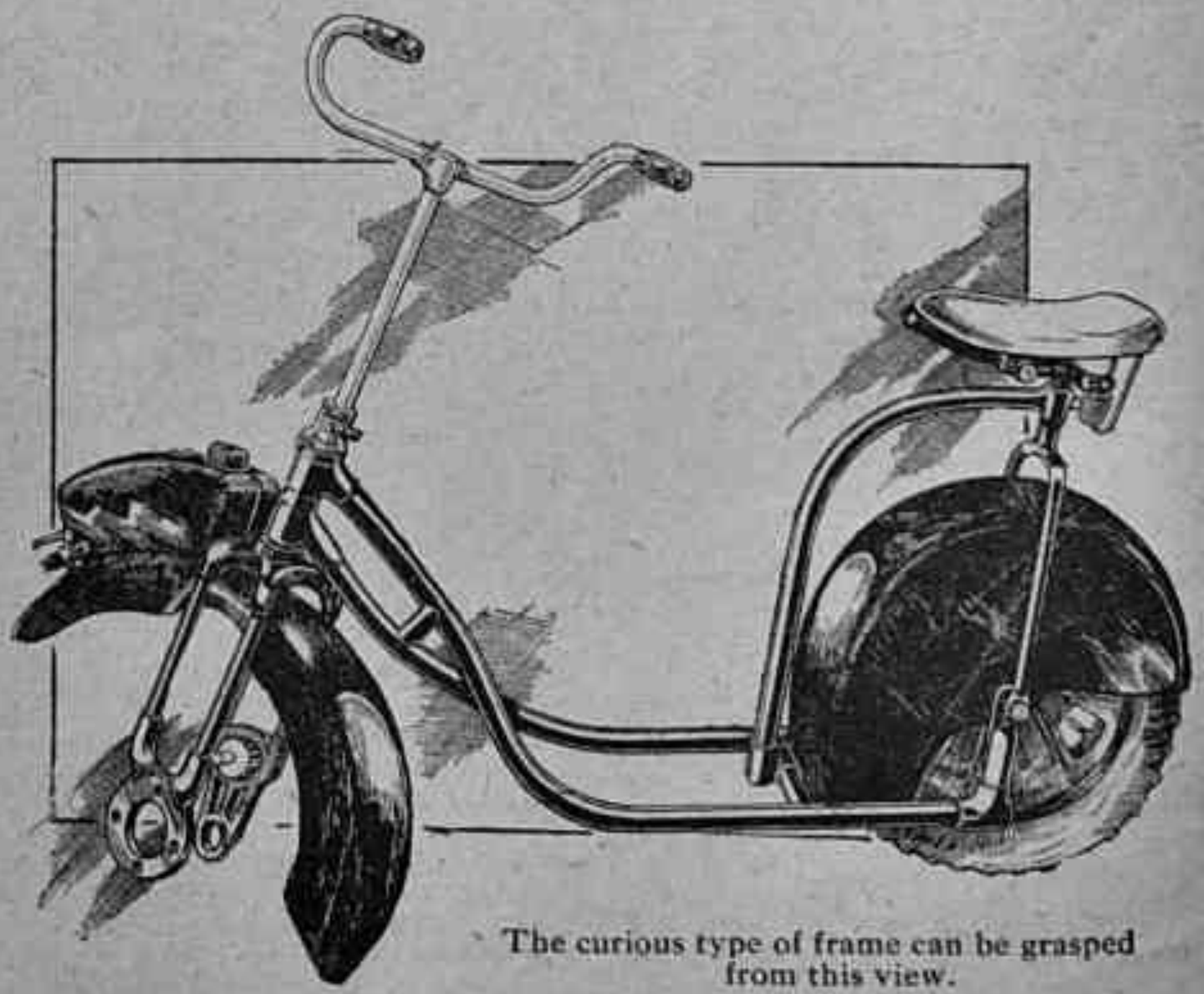
The engine is a three-port two-stroke, 60 mm. by 70 mm. bore and stroke, rated at 2 h.p., incorporating an ordinary motorcycle magneto driven by means of a chain. An Amac carburetter is fitted and lubrication is on the well-known petroil system.

Production Plans Not Yet Complete.

Mr. Ward does not propose to manufacture this scooter on a commercial scale, but it is hoped that negotiations with this object in view will be entered into in the near future. For this reason, no details as to price, etc., are available, and readers should defer making any inquiries until a further announcement appears in these columns.

Mobile Pup Scooter Production.

We learn that, although the recent labour unrest has had the effect of delaying delivery of the Mobile Pup scooter, the manufacturers are now well on the way towards large production, and the demonstration machines are expected to be ready within the next week or so. Arrangements have been completed for an output of from 200 to 300 machines per week from November onwards, and the position is that orders placed now are reasonably certain to be executed within the next two or three months.



The curious type of frame can be grasped from this view.

THE MACLEAN SPRINGING SYSTEM.

A Principle, Incorporating Coil Springs, Specially Adaptable for Motorcycle Use.

WE illustrate a new method of applying the coil spring in connection with motorcycle suspension, which, it is claimed, will minimize rebound and provide freedom from broken springs. This latter desideratum is a natural outcome of the fact that the system permits the use of springs the same diameter and section throughout, and the absence of the short coiled ends commonly employed on springs for anchoring purposes also provides greater flexibility, as the spring compresses to a uniform extent throughout its whole length.

The Principle of the Spring.

The Maclean spring is perfectly simple, and its action can best be followed by reference to the accompanying illustration (Fig. 1), which shows in diagrammatic form the principle. It will be seen that the spring is enclosed in a steel barrel, having lips formed at each end, which bear on half the width of the end coils, the other half of the width bearing up against surfaces forming part of the inner member. By this arrangement the spring is in a state of compression in both directions, and, as it possesses a certain amount of initial compression, it is not extended to its fullest degree at the moment when reversal of direction occurs.

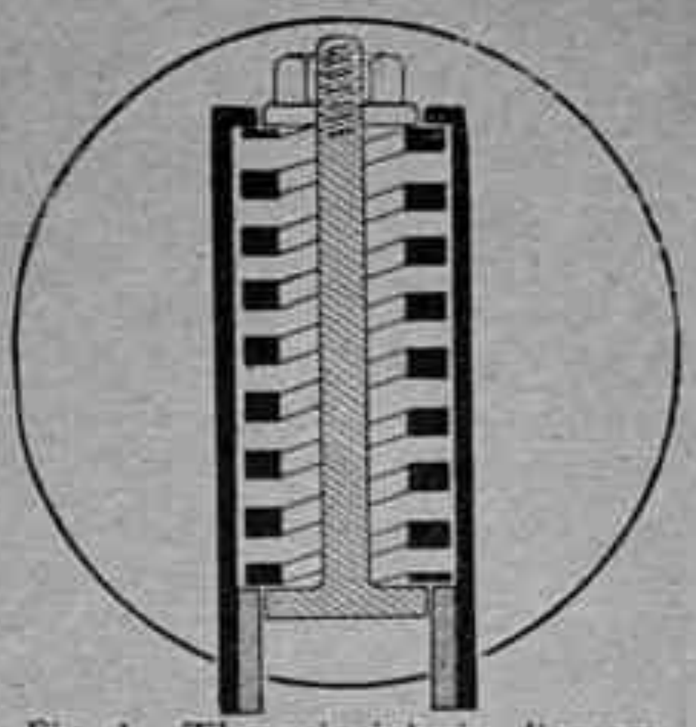


Fig. 1.—The principle in diagrammatic form.

How "Dither" is Caused.

In a spring held at each end through the medium of short coiled ends, it is in compression and tension alternately, and the chief cause of bounce is the length of movement given to the spring by the weight of the machine and rider. When the machine meets an obstacle the spring moves a certain distance, and on its return is thrown back the amount of movement due to the shock, plus the distance taken up by the initial weight of the machine and rider, and the velocity of the rebound carries the spring into tension on the other side. This long movement of the spring does not die out instantly, but causes a succession of diminishing movements in each direction—which is what motorcyclists call "dither." To do away with this "dither" is the chief object of the Maclean arrangement.

For Use in Triumph Forks.

In its practical application, as supplied to fit the Triumph spring fork, the Maclean system employs two springs, an inner spring capable of being adjusted to take the load of the machine and rider, and an outer spring, at rest and in reserve, which does not come into operation until the inner spring has moved a quarter of an inch, which is equal to a movement of about half an inch of the front wheel. The inner spring consequently insulates the machine on an ordinary "good" road, the outer spring coming into action when the front wheel encounters, say, a pot-hole. Reference to the illustrations (Figs. 2, 3 and 4) will show exactly what happens. Fig. 2 represents the relative positions of the parts in the ordinary way.

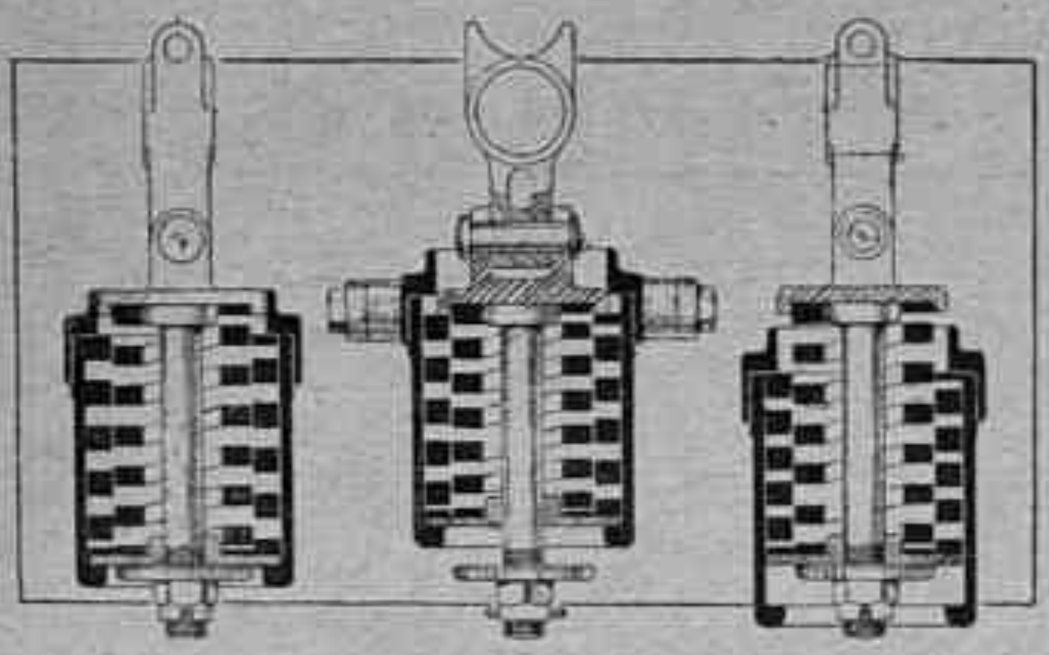


Fig. 2.—As adapted for the Triumph motorcycle. Normal position of springs.

Fig. 3.—On striking a pot-hole. Note that the outer spring has come into action.

Fig. 4.—During rebound, the outer spring recompresses from the other end, acting as a check.

Assuming that something abnormal in the road surface has been met, causing the front wheel to move one inch, the position of the springs is as shown in Fig. 3, the inner spring now being compressed half an inch plus the original adjustment, whilst the outer spring has been compressed only a quarter of an inch from rest. On rebound the inner spring returns to its normal position, and the outer spring cushions the excessive recoil as shown in Fig. 4. The great beauty of this device is undoubtedly the ingenious way in which the outer spring is caused to perform the double function of supplementing the inner spring in the case of an abnormal shock and resisting the tendency to recoil.

Its Great Feature.

The inventor contends, and we certainly agree with him, that if a spring is designed to give comfort under normal conditions, it is too weak to meet abnormal conditions, *although during recoil it is actually far too strong.* For this reason it is easy to appreciate the value of the outer spring in the Maclean arrangement, as this only comes into operation when a really bad bump is experienced, and even then it does not add to the rebound, as once beyond a certain point it re-compresses, checking what slight amount of reaction is present in the inner spring.

The illustrations show a spring made specially to fit Triumph motorcycles, but the system is, of course, applicable to any spring fork; it also lends itself to incorporation in a cheap and efficient method of rear springing, the design of which, we understand, is being proceeded with.

Messrs. Tilston Engines, Ltd., 59 and 61, New Oxford Street, London, W.C. 1, are the manufacturers of the Maclean Patent Spring (to give it its full title), and we would refer our readers to their advertisement appearing in another part of this issue, which contains an interesting offer.

A New F.R.S. Sidecar Lamp.

THE manufacturers of the well-known F.R.S. lamps have just placed on the market a new electric sidecar lamp, which is very nicely finished. A special feature about the lamp is that, should a puncture occur in the sidecar tyre, all that is necessary in the way of light for the repair is to screw out the adapter in body-complete, the bulb immediately lighting on contact with any metal part of the sidecar. The lamp is fixed to the body of the sidecar direct, a nut inside the body securing it. A rear light is also incorporated in the lamp.

Dissolution of Partnership.

THE partnership existing between Messrs. R. E. Phillips and A. M. Flack, chartered patent agents, of 70, Chancery Lane, London, W.C., has been terminated, and Mr. A. Knight Croad has been taken into partnership by Mr. Phillips.

Of Interest to Manufacturers.

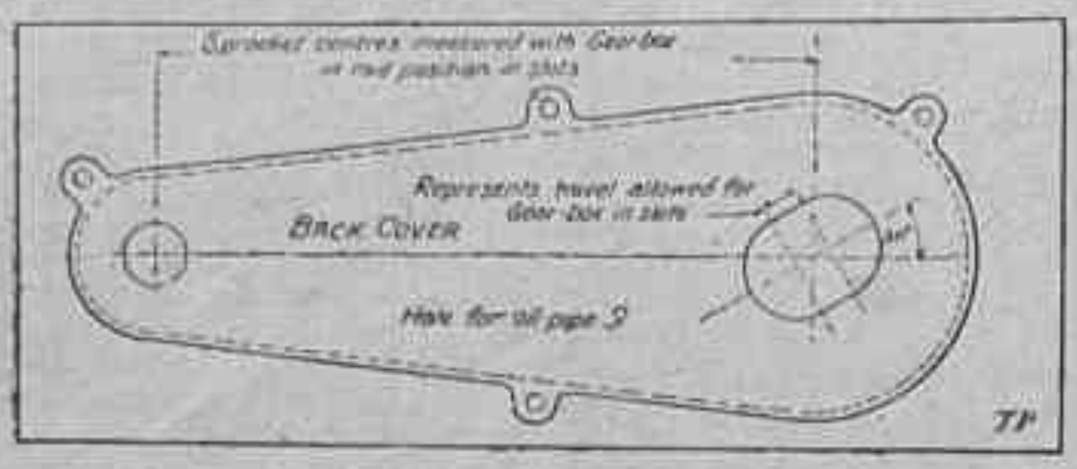
WE know of a concern that has produced a remarkably neat and efficient scooter, and is desirous of selling the completed model, which has been thoroughly tested, together with the working drawings, patents, registrations, etc. The machine as it stands is all ready for mass production to be proceeded with. Inquiries marked "Scooter," addressed to this office, will be forwarded to the proper quarter.

B15

A SIMPLY-CONSTRUCTED CHAINCASE FOR DOUGLAS 2¾ h.p. MOTORCYCLES.

IN 1914 the writer was the possessor of a 2¾ h.p. Douglas machine, which was a wonderfully satisfactory mount except in one or two respects. Chief of the latter concerned the chain drive to the gearbox, which was unprotected except for the light guard fitted as standard to these machines.

The writer constructed a chaincase,



Dimensions for cutting the back cover.

of which the following is a description, with the simplest of tools and materials, and the whole job is certainly not beyond the abilities of the average amateur.

The metal required is ordinary sheet steel, and if it is already tinned so much the better. The thickness should be about 20-22 s.w.g. for lightness and ease of manipulation. A piece about 2 ft. square will be sufficient.

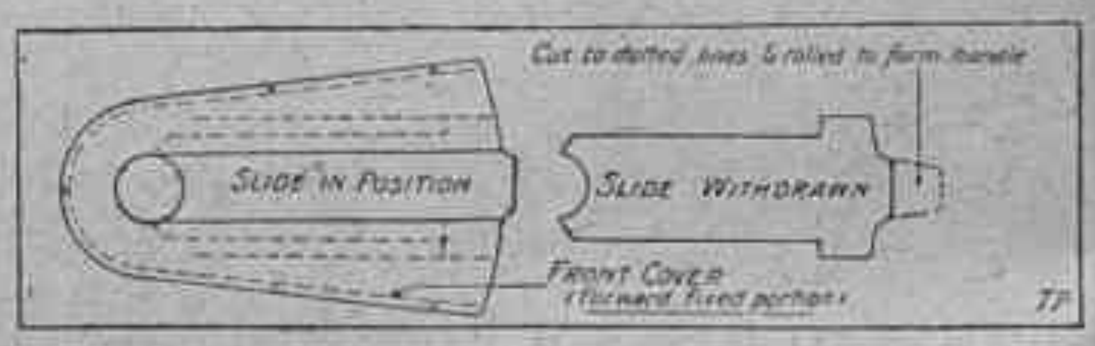
Before the existing chainguard is removed, the first part of the process is to mark carefully the position of the bolts in the slots of the guard *when the gearbox is moved right back towards the rear wheel*. Having done this, shift the gearbox to the mid-position in the slots and measure from the centre of the flywheel to the centre of the gearbox chain sprocket. The guard may now be removed complete and bolted up afresh, using the marks obtained above as a guide to correct adjustment.

We will consider first the construction of the back cover shown in Fig. 1. To mark this out, lay the chain guard on the sheet metal, and whilst holding the former firmly in place, run a scriber round the inside of the guard and as close into the latter as possible, so that a true outline is obtained on the plate. This should give a contour approximating the dotted line in Fig. 1. Next mark a line ¾ in. outside this contour line all round, and at the same time note position of the four bolts, so that correct allowance may be made for the lugs.

Having cut carefully round the outside line with a pair of shears, mark a centre line down the whole length, and at the forward end mark the position of the flywheel centre. From this point measure off along the centre line the distance between flywheel and gearbox sprockets previously obtained. Through the latter draw a line at 30 degrees to the other; this will represent the line along which the slotted opening for the gearbox boss may be set out. Reference to Fig. 1 will probably show more clearly how the above measurements are set out.

In marking out holes in the back cover for the main shaft and gearbox, note that the hole for the former is cut to clear the shaft by ⅛ in. all round, while the latter is cut to clear the aluminium gearbox boss by the same amount, plus an allowance for adjustment along the 30 degree line.

How the slide should be formed.



Before actually cutting the holes out, the business of "dishing" the cover should be undertaken. This is best done by hammering over a suitably-shaped wooden block, using the latter as an anvil. This job requires patience—gradually working a curved edge all the way round. Care should be taken not to buckle the whole cover in the process, and not to bend over the extreme forward lug which fits over the stud in the crankcase.

Assuming that the back cover has been hammered to a snug fit over the chainguard, the edges can be trimmed where necessary, the lugs properly finished off, and the holes punched in the latter for the bolts. The two openings in the cover can then be cut out with a chisel and finished off with a half-round file. The hole for the oil pipe should not be cut out until the chaincase is fitted.

The next item to be tackled is the forward portion of the front cover. The outline of this is marked out exactly as before; in the dishing process, however, remember that it is supposed to be riveted *inside* the chain guard, and must be fitted accordingly. The writer provided this portion of the cover with a simple slide, so that the cover and guard could be removed from the machine without disturbing the flywheel or the flywheel chain sprocket. If so desired it can be made in one piece; this necessitates removal of the flywheel sprocket, however, before the case can be fitted in place. In addition to this, if it is afterwards at any time necessary to remove the chain guard, the flywheel must also be removed before this can be done. If the slide be decided upon, it is very simply made, and slips between two guides soldered behind the front cover, according to the dotted lines in Fig. 2.

The open end of the front cover should be arranged to project about 1½ in. beyond the edge of the flywheel, and be cut to a curve having the same centre. Five ⅛ in. copper rivets are sufficient to fix the whole firmly to the chain guard.

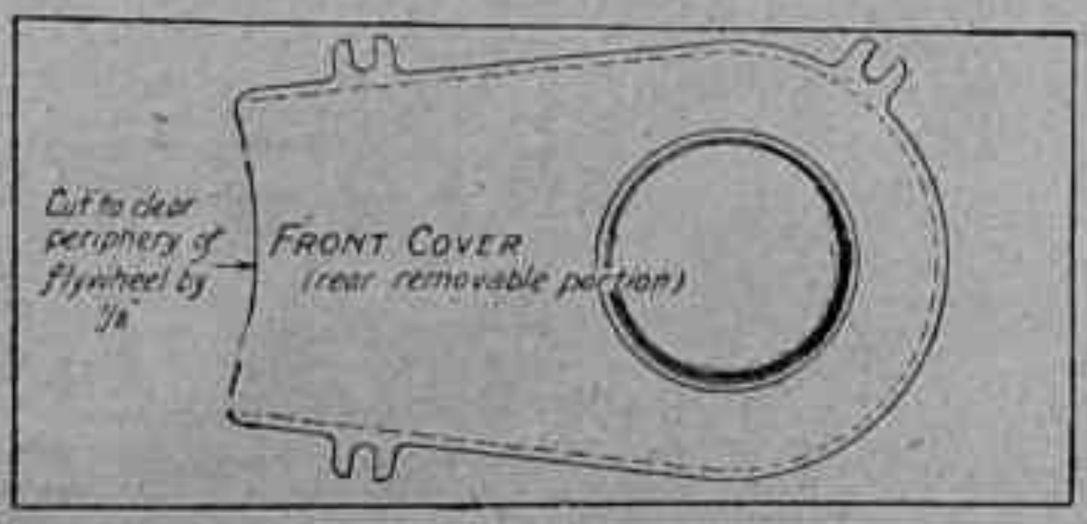
Before cutting holes in any of the covers the latter should first of all be "dished," otherwise there is just a possibility of the metal buckling under the process of hammering round the edges.

The front removable portion of the cover should next be taken in hand. The marking out process is carried out as before, and, in addition, the position of the raised boss to clear the sprocket lock-nut should be set out with a compass. This boss must be sufficiently large in diameter to clear the nut in whatever position the gearbox may be. This part of the work was carried out with the aid of a large iron washer and an ordinary ball-headed engineer's hammer.

The internal diameter of the washer was slightly greater than the size of the boss required, and was laid under the work exactly where the boss was to be formed. Gentle tapping with a hammer soon produces a circular depression in the plate, but patience is needed to get a smoothly rounded effect without causing any buckling of the surrounding plate.

It will be noticed that the lugs for fixing this cover to the chain guard are slotted in this case, so that by slacking off the three bolts the cover can be withdrawn for inspecting the chain without disturbing any other part of the case.

The only thing remaining to be done is to fit the case to the machine and complete the lubrication arrangements.



The front cover — rear removable portion.

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The Secret of the Sphinx.

"Is there such a thing as a perfect 3-speed gear?"

"Of course there is, my boy!"

"Ask any dispatch-rider and he will tell you that that 4½ years of war testing proved the claim of the

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ROYAL RUBY 2½ h.p. 2-stroke Lightweight

—"really marvellous."

Copy of Testimonial from P. H. Long, Esq., Kemerton. 7th July, 1919.

Dear Sirs,

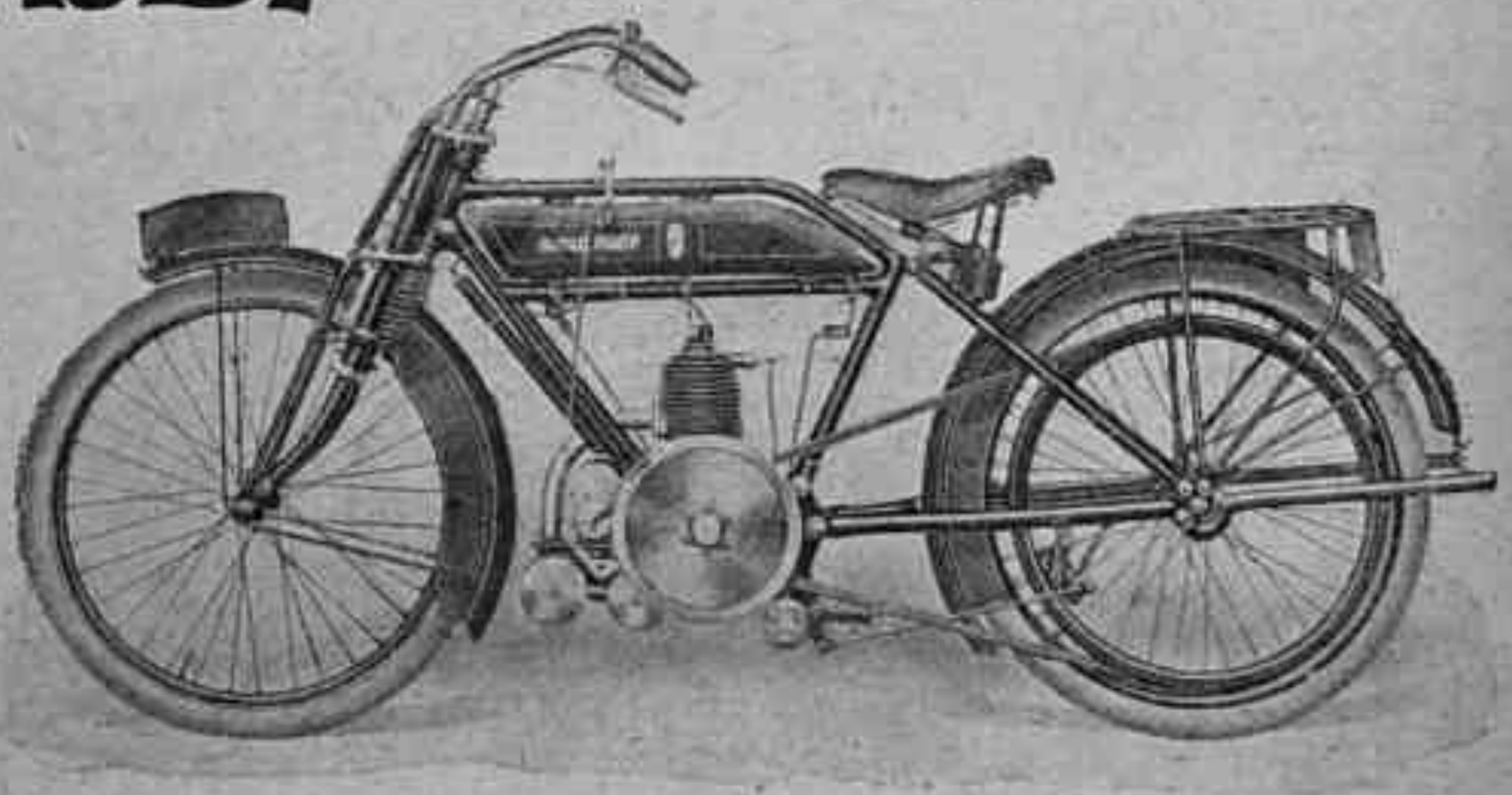
I purchased in August, 1916, one of your 2½ h.p. two-stroke single speed models from your Tewkesbury agent, and it gives me great pleasure to write to you and tell you how admirably she has kept up to nearly three years of continuous running, and is still going as well as, if not better than, when I first had her.

I have put her to some strenuous tests in hill climbing both by myself and also with a thirteen stone passenger on the carrier (I myself am 11), and some of the hills she has taken us up, especially in the very hilly district of Bristol and Clifton, has really surprised me: in fact, I know of some higher-powered and two speed machines she has outdone on the hills—she is really marvellous.

She has been admired by many riders of other makes, and I have also recommended the machine, which I hope will be to your advantage.

I write this testimonial unsolicited and you may make what use of it you choose.

I am, Yours faithfully,
(Signed) PHILIP H. LONG.



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Maximum service at minimum cost is provided for Royal Ruby Lightweight Riders. Fitted with Villiers 2½ h.p. 2-stroke engine, Dunlop motorcyclette 26 x 2 in. B.E. tyres, Dunlop belt and Brooks saddle, and with the Royal Ruby special frame and patent safety stays, it is indisputably the best value on the market.

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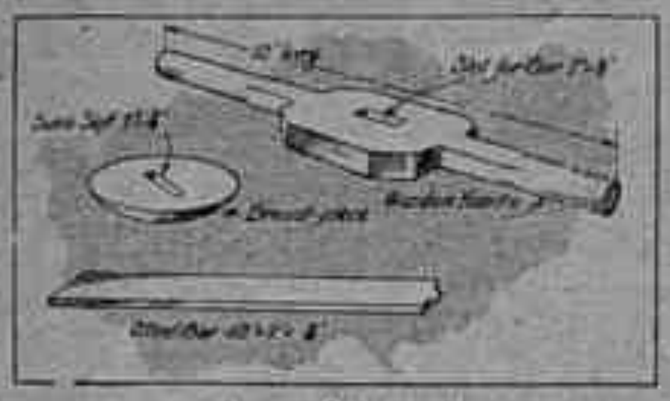
THE PRACTICAL PAGE.

Devices by Means of Which You Can Obtain More Enjoyment from Your Machine.

Contributions to this page are invited. A "Motor Cycling" Ten Shilling Note franking the purchase of goods to this value from any advertiser in our pages, is forwarded to the sender of every description which is utilised.

To Remove Obstinate Screws.

RECENTLY I dismantled my 1914 Triumph for re-bushing, but found it impossible to remove the taper screw holding the timing pinion to the engine shaft. After making vain efforts with several screwdrivers I got a piece of 1 in. by ¼ in. steel about 1 ft. in length, one end of which was ground to fit the screw-

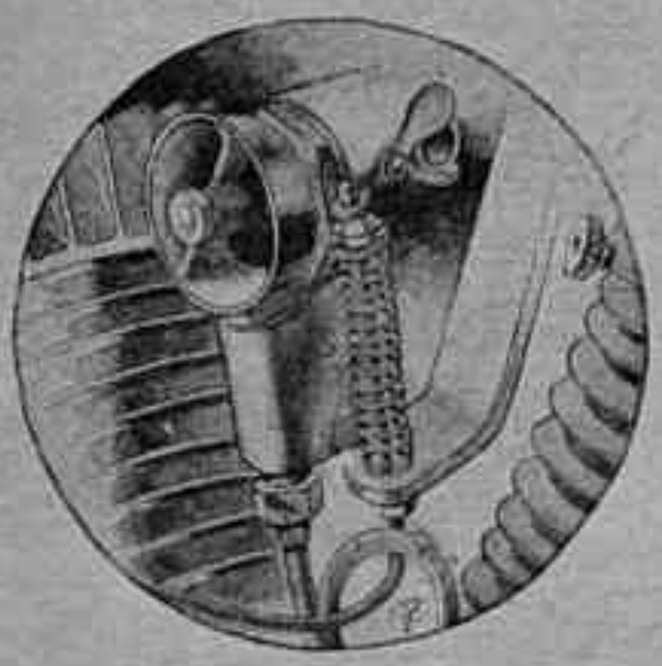


A useful tool.

head. I then secured a piece of hard wood, shaped it as in sketch, and cut a slot to take the steel bar. I also made a breast piece with a sunken slot, and with this in position I was enabled to remove the screw at the first attempt.—(8, Kilrush Terrace, Walton Road, Wokjng.)

For Douglas Riders and Others.

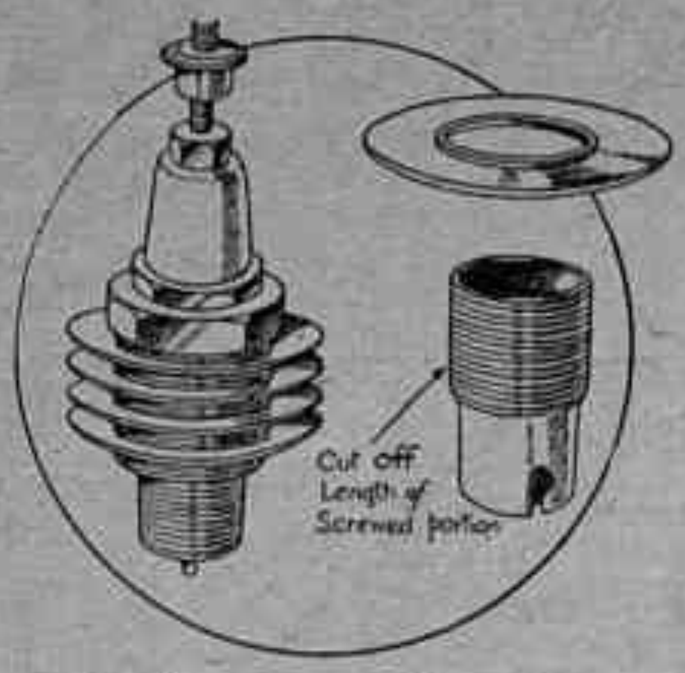
ANYONE who is troubled with the glass sight feed lubricator on a 2¾ h.p. Douglas fouling up can easily remedy it, and always have a clear glass with the drip easily visible, by making a minute air hole in either of the metal sides between which the glass tube is held. The hole should be drilled high up; in fact, so that it comes as close to the inner surface of the glass tube as possible. The best way to make the hole is to drill same with a ⅛ in. drill from the outside, until the point of the drill is about to come through the metal. The top of the little cone thus formed on the inside of the metal can then be touched off with a file until a minute hole is made. This hole, admitting air from outside the glass, will be found to be a perfect preventive of oil remaining in the glass tube or on its surfaces, and giving at all times a clear and visible drip feed.—(H.H., Chiswick, W. 4.)



A Schebler carburetter device

A Plug Cooling Device.

FOR those who cannot go to the expense of a Lodge aero plug, the fitment illustrated will be found effective in aiding the cooling of the Lodge standard model. Procure an ordinary electric lamp holder and four rings that are used for securing the shades. Saw off as much as necessary of the screwed portion of the holder which will be found to be a driving fit on the plug body. Next cut a 2½-in. circle out of thin sheet copper and make hole just sufficiently large to enable the edges being pressed into the groove of the shade holder ring. The edges of the ring are then tapped over so as to grip the copper. Four of these fins can be fitted in this way. If the plug screws into a recessed valve cap the fins can, of course, be made of smaller diameter.—(K.H.D., 15, Fern Bank, Greaves, Lancaster.)



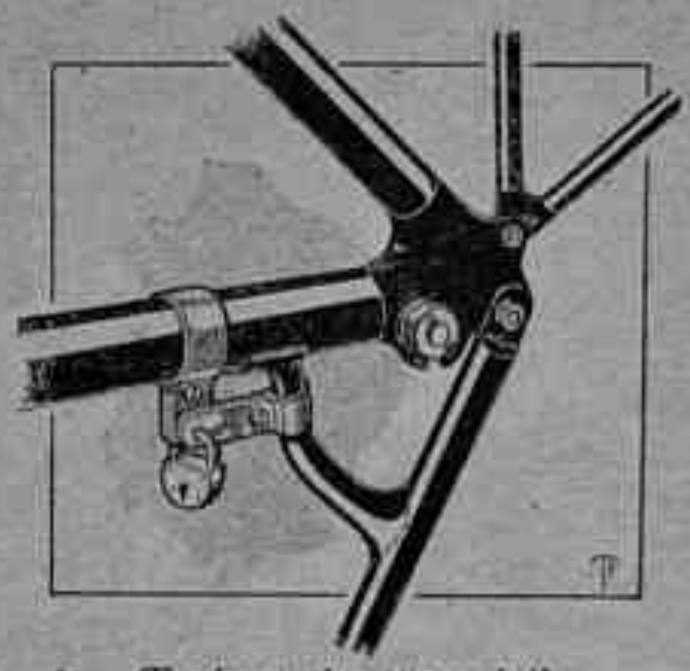
Cooling the sparking plug.

A Tip for Harley-Davidson Riders.

TO effect the correct adjustment of the Schebler carburetter is not a particularly easy job, and a considerable difference will be noted when different fuels are used without first readjusting the carburetter. I recently noticed a neat device attached to the Schebler carburetter of a Harley-Davidson. A short arm was attached to the lower tank tube, supporting a Bowden control which operated the side air inlet of the carburetter. By this means a perfectly correct mixture could always be obtained.

Improving the Harley Clutch.

THE clutch pedal on the Harley-Davidson motorcycle is not particularly easy to manipulate when driving in traffic, owing to the fact that the pedal is usually rather stiff, and that foot pressure has to be applied to withdraw the clutch as well as to let the clutch in. A considerable improvement can be obtained by dispensing with the friction device at the base of the pedal altogether. A small hole should be drilled near the rear pedal plate, and a spring interposed between this and the footboard. By this means the clutch is automatically withdrawn as soon as the foot pressure is removed from the foremost part of the pedal.—E.W.L. (Wembley.)



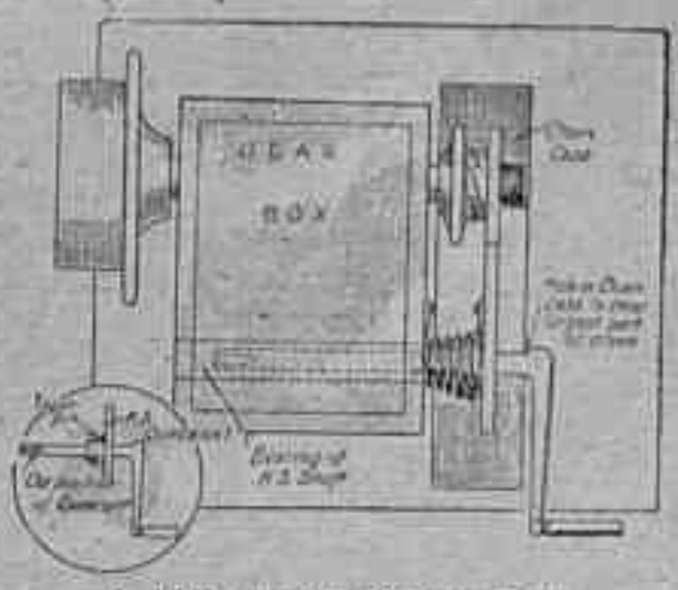
To test the "crook."

Ingenious Thief-proof Device.

FOR some considerable time I have used the thief-proof device illustrated. It simply consists of two metal strips, 1-16 in. thick by ¾ in. in width, as illustrated. These clips are bent to suit the rear stays and rear stand girder, and can, of course, be cut to the length required. Drill a 3-16 in. hole and insert bolts and nuts, likewise a hole large enough to admit the padlock arm. Owing to the clips being made the same length each side, they cannot be removed from the machine while the padlock is in position, and unless the thief has a hacksaw or a hammer and chisel in his possession he will be unable to remove it from the stand.—(F.M., 95, Spring Lane, Lees, Oldham.)

An American Excelsior Tip.

I FOUND the left-hand kick-starter on my American Excelsior very inconvenient, so carried out the alteration as shown in sketch. By taking off the chain case and undoing one of the screws that hold the return spring the axle of the kick-starter was knocked out of the quadrant, the key taken out, and the axle driven in the other way, as illustrated. When the correct position was found, a 3-16 in. hole was drilled through the quadrant boss and axle and reamered out to take a ¼ in. taper pin, as in sketch. A hole was then drilled in the chain case large enough to enable the case to be threaded over the crank.—(S.H.C., 114, Westbury Avenue, Wood Green, N.22.)



A kick-starter conversion.

Road Experiences with New Models.

3000 Miles on a 1919 Harley-Davidson

A Sweet-running Combination with an Ample Reserve of Power.

A LAPSE of twenty years has not sufficed to remove the bad impression which the very inferior American bicycles created in this country during the boom years of the late 'nineties. In consequence, the importers of American motorcycles find that the resulting prejudice is the greatest impediment to the popularity of their products in this country. Really this prejudice is hard to understand when we remember the very large number and variety of American cars in use in this country and the excellent service that most of them give. If America can build satisfactory motorcars, why not motorcycles? Only too frequently, however, one hears the remark passed that while the —— machine is very attractive and runs well, it is bound to fall to pieces sooner or later, "because it is American."

The Best come to England.

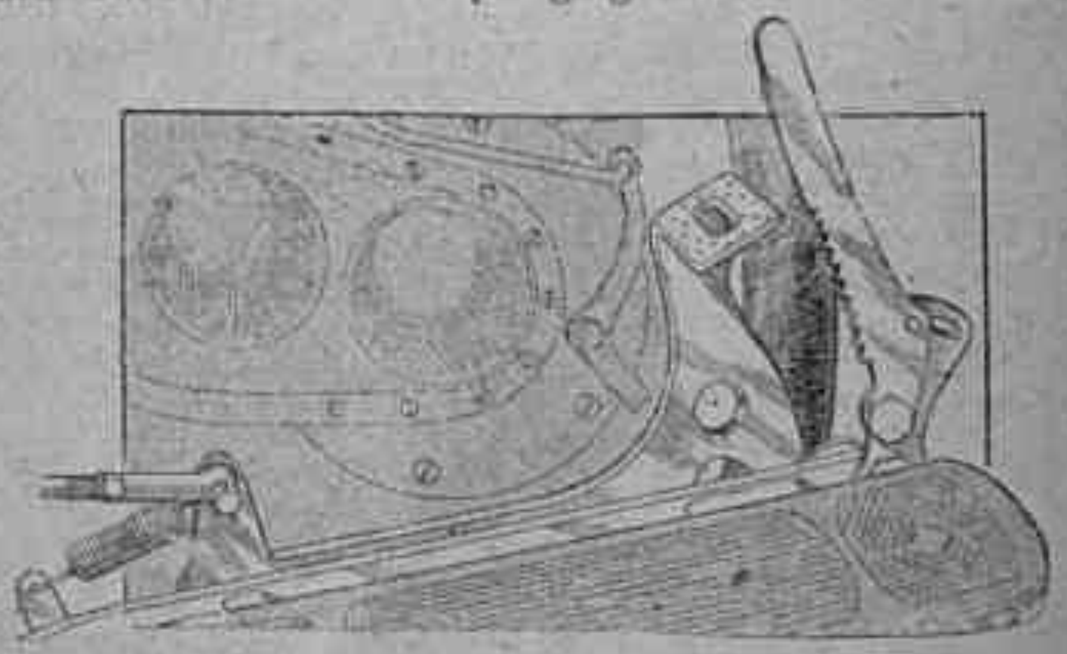
The number of makes of motorcycles produced in the States is very small, and so far as importation to this country is concerned, could be counted on the fingers of one hand. We are fortunate, moreover, inasmuch as these few imported makes are the cream of the American motorcycle market, and while we do not suggest for one moment that they are in any way the superior of the best of our British products, we certainly think that were we called upon to nominate ten most satisfactory motorcycles procurable at the present time, we should include two or three American machines in the list.

In pursuance of our policy of obtaining first-hand experience of every possible make of motorcycle, we recently took into staff use a 1919 Harley-Davidson and sidecar. It is common knowledge that import restrictions have permitted only a small quantity of this year's productions reaching this country, so that this model is not particularly well known amongst British riders. At the same time very few alterations have been made, at least so far as the power unit is concerned, from the 1917-18 machine. Minor alterations in the design of the valve rocker gear and the clutch are all that need be mentioned in connection with the engine and transmission.

A No-trouble Electrical System.

The Remy generator, however, has been entirely redesigned, and our experience, which extends over some 3,000 miles of hard riding in a comparatively short period, has proved that this particular fitment is now eminently satisfactory. As is generally known, the original current for starting up the engine is supplied by a 6-volt accumulator carried behind the seat post, the low-tension current being intensified through the usual coil. Immediately the engine commences to run, the Remy generator comes into operation, and supplies sufficient current to keep the accumulator fully charged and, of course, fulfil the requirements of the ignition and the lighting circuit.

Changing over from a typically British machine we found the riding position to appear a little strange at first, but it was by no means uncomfortable, and the first 50 miles riding convinced us that the special system of saddle springing and the oversize tyre fitted to the rear wheel (of which more anon), made the machine the equivalent of most spring-frame models, without, of course, incorporating the unavoidable drawbacks which rear springing carries in its train.



A useful (but not standard) fitment on the machine under review. When the brake pedal is depressed the ratchet shown can be brought forward to lock it and thus hold the brake on. It is especially useful when the machine is left standing on a hill.

3,000 Miles on a 1919 Harley-Davidson (contd.).

The twist-grip control came naturally to us—we rode machines so fitted in 1909, 1910, and 1911—and really we consider that this type of control will become very general in England when we have as an efficient an automatic carburetter as the Schebler. Possibly this time will arrive when the merits of the Capac and the new single-lever A.M.A.C. become better known.

Our liking for oversize tyres has often been expressed in these pages, and we were glad therefore to find that the particular machine under review was fitted with a 29 in. by 3½ in. tyre on the rear wheel, this, of course, fitting the 28 by 3 in. rim without trouble. Incidentally, despite the weight of the outfit caused by its very complete equipment, the tyres (Goodyears) have proved most satisfactory, and we have yet to have a cover off for any purpose.

A very roomy and consequently heavy sidecar is fitted to the machine, and this in turn is equipped with a large windscreen with side wings, and a folding hood. The body is very luxuriously upholstered, and is certainly the most comfortable that we have yet experienced.

How it has Run.

So much for the machine; now for its performance. In the whole of our 3,000 miles running, we have never had a stop through mechanical trouble, and have had no breakages of any kind. On a recent occasion when the engine was dismantled for decarbonizing, it was most critically inspected and failed to show the slightest sign of wear in any part. Possibly this is largely due to the efficiency of the mechanical lubricator, which we found positive in action and absolutely dependable. The only trouble that we have experienced on the road at all has been due to a slight derangement of the Schebler carburetter on two occasions, and we strongly suspect that the trouble lay not so much with the carburetter, as with the varying quality of the spirit procurable at present.

In view of the heavy equipment, it is perhaps unfair to speak of speed, but we may say that on a recent run of nearly 250 miles down to South Wales, with a load of three passengers in addition to the driver, and a quantity of luggage carried in the ample locker at the back of the sidecar, we found no difficulty in averaging 25 m.p.h., and on occasions when the nature of the road permitted a little speed to be indulged in, 42 m.p.h. could be registered by Bonniksen speedometer. For the benefit of those who know the hill, it may be added that the famous Caerphilly mountain, which has been the scene of many hill-climbs organized by the Cardiff Club, was climbed with this heavy load with the greatest of ease.

The engine has proved a particularly good puller, and provided the compression reduction plates which are fitted by the makers at the base of the cylinders are not removed, there is little or no tendency to knock, however badly the engine may be over-driven.

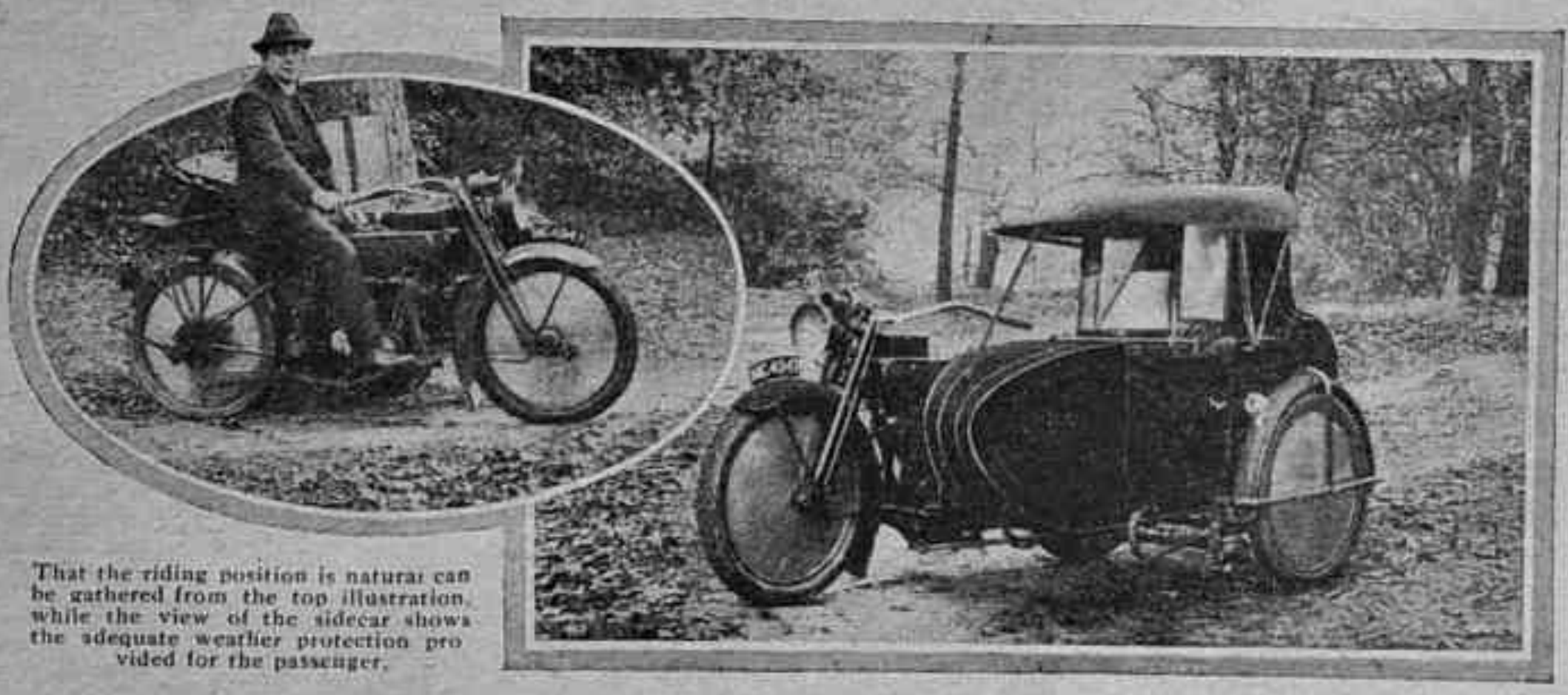
The gearbox deserves a paragraph to itself. The well-known Harley-Davidson system of inter-connecting the clutch and gear-changing mechanism so that the latter operation cannot be carried out until declutching is complete, is retained, and personally we consider it a very strong point. While there is absolutely no difficulty in obtaining an efficient and silent change with this method, it is, of course, impossible to damage the box in any way. Another point that particularly impresses us is its capacity for holding oil, and it is a fact that on the completion of a recent 700-mile journey, the oil level in the box had not dropped sufficiently to permit of a small charge from an oil gun being inserted.

To the æsthetic, the attractiveness and the excellence of the finish of the machine will appeal. The enamelling seems to be of that very hard-faced quality which will stand any amount of knocking about without chipping or scratching.

A Little Criticism.

The perfect motorcycle has not yet been evolved, and naturally there are points of criticism even about a machine which has given so much satisfaction. While it is an easy matter to do minor engine repairs, or to grind in the valves, to decarbonize means that the engine has to be removed from the frame. The makers claim—and we think rightly—that their mechanical system of lubrication means that the engine should not require decarbonizing under two to three thousand miles, but, of course, the fact remains that it has to be done sooner or later. The silencer, too, is not so efficient as we should like, but we understand that this has been very much improved on the later 1919 models, so that perhaps we need not emphasize this point. We do not suggest that the exhaust note is not efficiently silenced; it is rather the construction of the silencer itself that calls for criticism.

To sum up, the outfit has proved wonderfully reliable, and has a silkiness and charm of running—probably due to a well-balanced engine, and a particularly efficient clutch—which has to be experienced to be realized. It has never failed us, and the impression it imparts of being a sound mechanical job invariably makes it a centre of attraction wherever motorcyclists congregate.



That the riding position is natural can be gathered from the top illustration, while the view of the sidecar shows the adequate weather protection provided for the passenger.

DIAGNOSING YOUR TROUBLES.

The Characteristics of Various Faults and How to Recognize Them.

"EXPERIENTIA DOCET" is an excellent dictum so far as it goes, and where the art of managing a motorcycle on the road and making simple adjustments, etc., is concerned it undoubtedly goes a long way. There is, however, a certain type of rider whose bump of mechanical logic seems to be in the nature of a cavernous hollow, no amount of experience ever appears to teach him the elements of simple cause and effect.

The Most Common Trouble—Misfiring.

Take, for example, the case of an ordinary misfire. How many riders, even of experience, can decide with any degree of confidence, before making an examination, whether it is ignition or carburation trouble? And yet there is usually quite a lot of difference between them. Consider logically the case of the carburation "miss" first. Broadly speaking, it is clear that this can only proceed from two causes:—Too much petrol or insufficient petrol; in other words, a permanently or, possibly, only a temporarily incorrect mixture, verging on and occasionally outstepping the limit of combustibility. Although there may be exceptions to this statement in its broadly unqualified form, it will be obvious that in the vast majority of cases carburation misses can be classed under this heading.

Having regard to the rate of operations in the working of a four-stroke motorcycle engine driven at ordinary speeds, it will further be evident on the most superficial consideration that the variation of mixture on each side of the combustible limit must be relatively gradual. In other words, no carburetter, however agile in action, could supply a consistently good mixture for, say, half-a-dozen firing strokes, and then suddenly, in the space of about 1-20th of a second, supply an incombustible charge for one cycle and instantaneously resume its good behaviour for another short spell. It is easy to see that the waverings of mixture strength must spread over a good many cycles, so that no single and complete miss can readily be sandwiched in between a fair number of full-blooded explosions. Where carburation is the cause, therefore, comparatively large batches of very indifferent and uncertain firing strokes will almost invariably be grouped around each actual misfire.

This is not so in the case of ignition. It is true that a very weak spark produces a slight retarding effect on the explosion developments, but its action in this respect is relatively negligible. It can be taken as definite for all practical purposes that, assuming the timing to be correct, a spark either fires a charge properly or completely misses.

Now note the difference, for here, on the contrary, it is possible to have complete misses sandwiched in among full and normal explosions. Anyone who knows his engine and can listen to the misfires with a moderately intelligent ear should easily be able to tell whether they are completely isolated, as in the latter case, or grouped with a series of weak and indifferent driving strokes.

Where the Ear Helps.

There are, of course, exceptional instances where an ignition misfire strongly resembles one due to carburation and vice versa, but in all ordinary cases the distinguishing characteristics of these troubles fall within the above category. Where, for example, the ignition driving pinions have slipped, the contact breaker comes partially adrift, or any other factor set in which can vary the timing of the spark within fairly wide limits the effect produced is strongly suggestive of carburation trouble. Even here a discriminating ear can detect the harsh flat noise of a good mixture fired very late, or the laboured and muffled thump generally accompanied by the characteristic metallic knock which happens when the spark becomes abnormally advanced. When the timing suddenly goes awry, misfires which precede the breakdown are generally produced in company with such preliminary symptoms as the above.

Such are the ordinary run of misfires which every practised ear should be capable of instantly interpreting. There are, however, a few interesting exceptions worth analysing. One in particular is of frequent occurrence and, judging from the number of times requests for advice thereon appear in the correspondence columns of the motor journals, it is evidently a very puzzling complaint. The symptoms are described again and again with such ludicrous similarity as to almost suggest collusion between the correspondents. The query usually commences by the suggestion that something is wrong with the carburetter, which cannot be located, and the writer then goes on to explain that when ascending a long hill, usually near the top, the petrol supply suddenly appears to be failing, the power falls off, and after a few preliminary backfires in the carburetter the engine stops!

Examination of the jets fails to disclose any stoppage, and the supply to the float chamber seems adequate. Nothing can be found at fault with the

THIS SEASON'S "WIZARD" AND HIS MACHINE

G. Dance and his now famous 2¼ overhead valve Sunbeam, with which he has been having matters pretty well his own way in recent competitions. Dance won no fewer than six events at Style Cop recently.

THE A.C.U. TRIALS.

In the Six Days' Trial of the A.C.U. Mr. F. G. Edmond's 4 h.p. Triumph with Gloria side-car was the only Single-cylinder Combination to gain

Gold Medal

Mr. F. G. Edmond in his 4 h.p. Triumph and Side-car.

Mr. Edmond made the fastest time of either Single or Twin on the test hill.

Six Triumphs Started!

Six Triumphs Finished!

50 per cent. were ridden by private owners.

Once again the TRUSTY TRIUMPH has proved its superiority against all comers.

TRIUMPH

TRIUMPH CYCLE Co., Ltd., Coventry.
London - - 218, Great Portland Street, W.1.
Also at LEEDS, MANCHESTER AND GLASGOW.
(The Company has nearly 2,000 Agents in the British Isles to attend to the wishes and needs of Motor Cyclists.)

B23

This Belt for your Engine's Sake!

A poor belt will fail to grip the pulley; it will not let your engine get fair play. The

PEDLEY

BELT—in which every manufacturing detail has been carried out to the highest degree of excellence—will reduce to a minimum, the possibility of wasting power.

J. PEDLEY & SON, Ltd.,
Oxford Works, Great Charles Street,
BIRMINGHAM.

London Depôt:
30, Holywell Lane,
Great Eastern St.
London,
E.C.2.

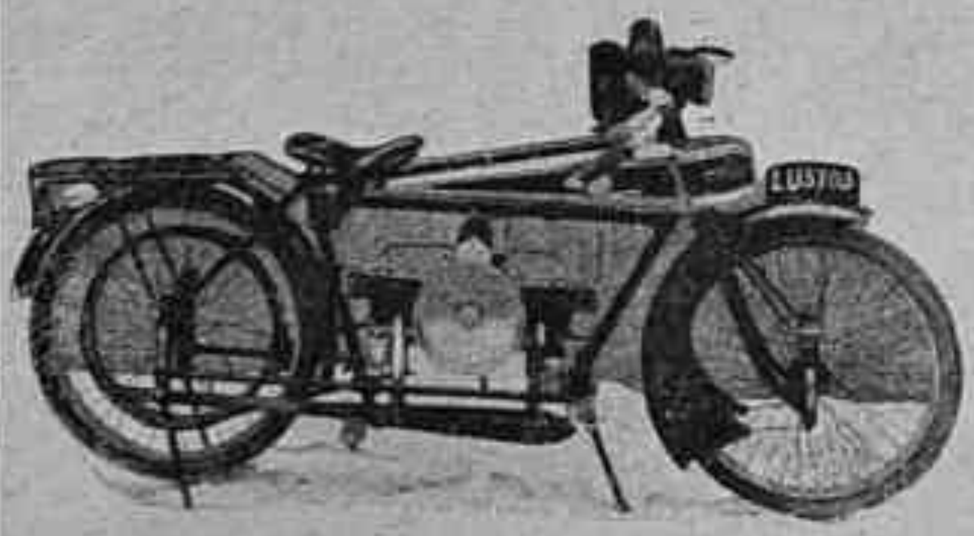
900 Miles, never even required Tightening

That was the service a Brand New Pedley Belt recently gave on a 3½ h.p. "Lewis," which completed the London to Edinburgh run, and then was driven to Exeter, making a total distance of 900 miles. The rider tells us that the Belt gave no trouble whatsoever on the road, and when taken off was found to be in perfect condition.

NO STRETCH—NO PULLING OUT.

WOOLER
ENGINEERING CO. Ltd.

ALPERTON, LONDON.



WOOLER 2¾ h.p. Flat-twin.
The Accessible Machine.
Write for Particulars.

Telephone: Wembley 252. Telegrams: Two-stroke, London.

311 Miles per Gallon

The result recently achieved on a

Wooler 2¾ Flat-twin

is indeed excellent; but astonishing? By no means, when you carefully consider the many unique features embodied in this machine.
The closer you examine the Wooler, the less astonished you will be at its exceptional mileage per gallon.
Consider carefully the reasons for this ultra-economical running.

(1) The Induction System has been designed entirely to eliminate freezing.
(2) The correct design of the Valve Gear prevents leakage in this quarter.
(3) The free running of the engine, owing to the three ball bearings supporting the Crankshaft, and perfect workmanship throughout.
(4) The Infinitely Variable Gear, with 9 speeds, enables the rider always to use the exactly suitable ratio.
(5) The frictionless running of the Gear, all stress being taken by ball bearings and ample ball thrust washers.
(6) Belt Drive absorbs less power than any other forms of transmission, but the belt must always be at the right tension to achieve this object.
The Wooler Rapid Belt-adjusting Device (without use of tools) accomplishes this essential.
(7) The Wooler Spring Frame obviates all back wheel bounce.

Why not Ride a Wooler and Do the Same?

B24 PLEASE REFER TO "MOTOR CYCLING" WHEN CORRESPONDING WITH ADVERTISERS.

Diagnosing Your Troubles (contd.).

ignition system, and to complete the bewilderment it is discovered that on another start being made the engine romps away as if nothing had happened. Here is a case where ordinary logic can at least eliminate some of the factors to which this trouble is popularly attributed.

Points to Look For.

Note first that the so-called starvation nearly always occurs on a hill and generally near the top. But the maximum spraying output of petrol, which is necessary to produce starvation if the supply is defective, does not occur on a hill and least of all when the engine is labouring near the top. The biggest demand is naturally made during high speeds on the level, when the throttle is well open and the engine revving hard. Therefore, it is palpable that, however greatly the symptoms may resemble starvation, this cannot be the cause.

Why It Cannot Be Due to the Magneto.

Almost the same arguments apply with respect to the magneto. The fact that the engine is labouring on the upper part of a gradient under heavy load has no effect whatever on the magneto, for, similar to the carburetter, its chief effort is called for at high engine speeds. The work of the magneto is to produce a standard spark when rotated at speeds between about 200 r.p.m. and 5,000 r.p.m. It knows and cares nothing about engine loads, and, figuratively speaking, it need not even be aware of the existence of the engine provided it is rotated between these approximate limits of speed. Therefore, exit the magneto from the charge sheet. In short, we come down by elimination to some condition temporarily induced by overheating, and this is amply confirmed by the engine recovering in a few moments after being stopped. It should not be difficult to guess now that the trouble is pre-ignition, which is possibly due to incandescent points, carbon or a very hot exhaust valve head, but nearly always the result of white-hot plug electrodes. In 90 per cent. of such cases an aero engine plug of reputable make having one stout electrode only will cure the trouble. Means should be taken to remedy the trouble at the source, for the failure to run with ordinary plugs shows that the cooling is insufficient. This is probably due to carbonization, bad valve timing, or exhaust choking.

Sticking Valves Unmistakable.

In a few cases the valves sticking in their guides can approximately produce this effect. It is, however, easy to tell the difference, for a binding valve, due to heat expansion of the stem, does not, as a rule, herald its approach by a gradual loss of power. It either sticks or it does not, and when it does so intermittently the sounds are unmistakable even to the amateur ear.

Insufficient tappet clearances and binding, when the engine becomes overheated, might possibly be mistaken at first for pre-ignition, but there is a considerable difference in the eventual results. The former simply causes some loss of power, usually accompanied by knocking, and develops gradually, while the latter very quickly comes to a head. Loss of power, slight staggering, firing in the carburetter, and complete stoppage—unless the load is removed—follow rapidly upon each other in the space of a few seconds.

A Misnomer.

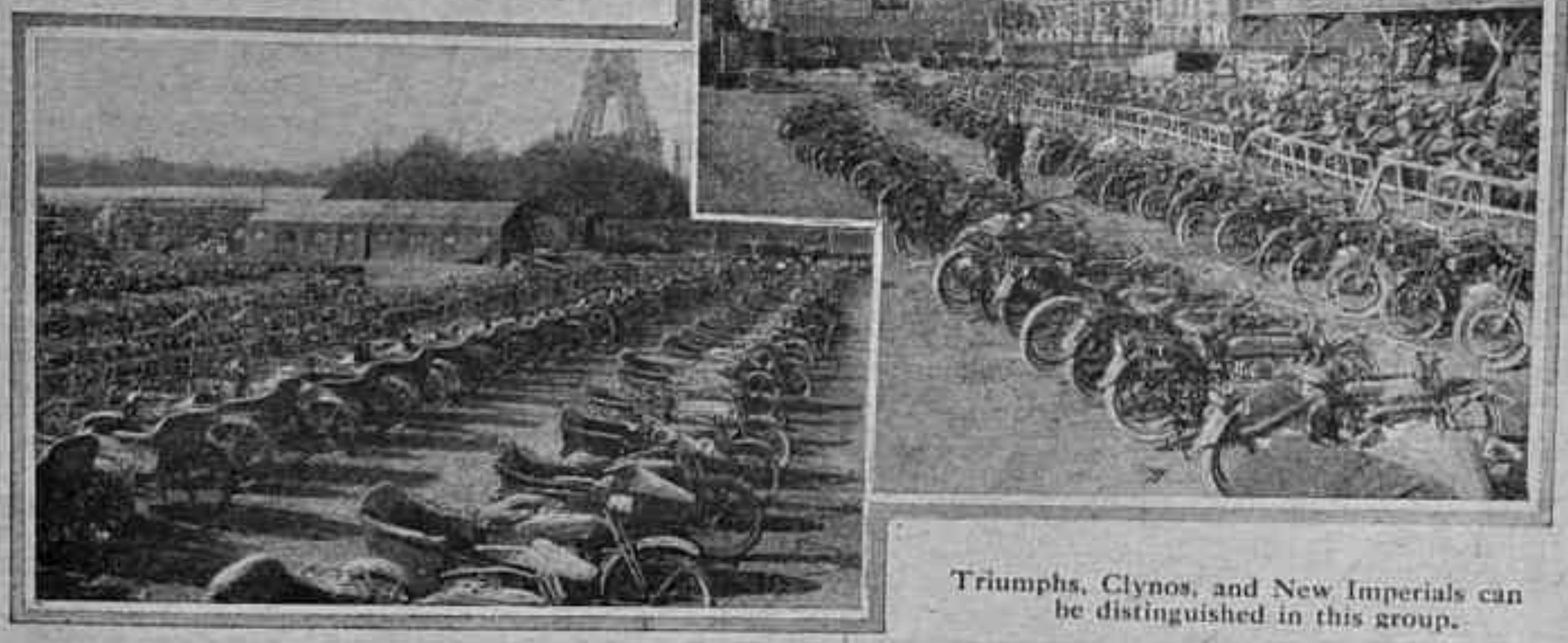
Pre-ignition, by the way, is a much misused word popularly, and the expression "pre-ignition knock" is frequently employed where "detonation knock" is the correct one. The difference is that in detonation the pressure resulting from the early stages of combustion compress and heat above its spontaneous ignition point the remainder of the charge, causing it to detonate throughout its remaining mass and producing the characteristic noise.

In pre-ignition proper the charge is fired by some incandescent agency before the passage of the spark. Detonation can go on indefinitely without stopping the engine, but pre-ignition, if once started, generally develops quickly, as described above, and if the load is increased will usually fire in the carburetter and stop the engine. They can, as a rule, be distinguished by the fact that a pre-igniting engine will run when switched off, whereas one that is detonating immediately stops when the current is cut off.

L. MANTELL.

(To be continued.)

A large batch of typically American machines is shown below, chiefly Harley-Davidsons.



Triumphs, Clynos, and New Imperials can be distinguished in this group.

Large quantities of motorcycles "demobbed" by the American Army were recently offered for sale at the Champs de Mars, Paris.

NEWS IN BRIEF.

The Southend-on-Sea Automobile Club recently held a most successful gymkhana. Our picture shows a competitor in the Blondin race.

Lighting-up time for Saturday, October 18th, 1919.

London	...	5.31 p.m.
Newcastle	...	5.37 p.m.
Birmingham	...	5.38 p.m.
Edinburgh	...	6.6 p.m.
Liverpool	...	5.41 p.m.
Bristol	...	5.41 p.m.
Dublin	...	6.24 p.m.

Lighting-up time in the United Kingdom and Ireland is now half-hour after sunset. Lamps must be kept lighted until half-hour before sunrise.

MOON.—Last quarter on the 16th.

The Blackpool Method.

THE Blackpool police have, under the local Improvement Act, power to apprehend an offender who drives to the danger of the public. Blackpool constables are also provided with white gloves so that their hands can plainly be seen when on traffic duty.

A Well-known Motorist Injured.

WE are sorry to learn that, as a result of a collision with a four-ton motor lorry, at Kilburn, Mr. John P. Grenfell, well-known in motorcycle circles, has lost the partial use of his right leg and the sight of his left eye. Mr. Grenfell is now on his way to recovery, but has decided, as a result of the accident, to give up active work in the motor business.

During the Strike.

WHILE there is no doubt that the motorcycle volunteers did good work at the Hyde Park Depot during the railway strike there were plenty of "shady" ones present, who on the first day took advantage of some inevitable slips in the hastily-formed organization. Petrol thieving was a frequent occurrence, and before the method could be adopted of checking every rider in and out of the Park several people had managed to get away on valuable Government machines not to return. It is said that over 20 machines were stolen on the first day.

The Man in Blue.

THE lot of the London policeman on traffic duty has been more strenuous than ever during the past two weeks. It is also fraught with considerable danger, for all the traffic drives very close up to Robert. A policeman on point duty at Holborn Hall during last week had the misfortune to have his left foot run over by a two-ton motor lorry. He showed plenty of the British grit, however, and made his way to the police-station opposite, from whence he was removed to hospital by a motor ambulance.

a26

The A.A. 5,000 Mile Benzole Test.

THIS test, although to some extent interfered with by the railway strike, is still being carried on with the same degree of accuracy. As announced in this journal last week, both the test machine and the accompanying tender were taken off the route mapped out and put on work of national importance. The machines have been chiefly used for the purposes of dispatch carrying between London and Coventry, and it was only yesterday that a resumption of the route was continued. Then both the Triumph combinations left Potter's Bar en route for Norwich. Recently the machines, after covering about 2,000 miles, were decarbonized at the Triumph works, Coventry, under the watchful eyes of a representative of the A.A. Engineering Department and Mr. R. S. Fox, M.A., M.I.M.E., etc. The little amount of carbon was an eye-opener to all and sundry, and the amount extracted from the engine of the test machine would not have over-filled a large size tobacco pipe. The carbon, as is usual when benzole is in use, was of a soft, tarry nature and very easily removed. The total mileage covered up till last week was about 3,000 miles.

The first of a fleet of sidecars which are being built for the proprietors of State Express cigarettes by the Sandham Engineering Company. These will be used for the purpose of conveying signs and materials for cleaning signs about the country.

Some Coming Events—Employment Scheme for the Demobilized.

Mr. W. Elce mounted on one of the new 8 h.p. spring frame Matchless machines. Deliveries of these models are now imminent.

Ware Trap.

A CORRESPONDENT informs us that a police trap is being worked between the railway stations at South Kentish Town and Camden Town.

S. Birmingham M.C.C. Open Trial.

THIS club will hold an open reliability trial for motorcycles and passenger machines on Saturday, November 1st. The awards in connection with this event are the Palmer Cup, four silver cups to be won outright, and a special cup for service or ex-service men.

A Whist Drive and Dance.

IN connection with the Rochester, Chatham and District Motoring Club a prize distribution, whist drive and dance will be held at the end of November. Those requiring tickets should communicate with the hon. sec. Surgeon-Lieut. S. White, 3, South Avenue, Rochester.

Road Hogs in the New Forest.

THE speed of motorists, cars in particular, in the New Forest has resulted in much public agitation, a speed limit being demanded as the result of a number of live stock being killed and mutilated. In one month alone no fewer than 13 New Forest ponies were either killed or mutilated, while a number of cows, pigs, and poultry have also been killed. It is up to these road hogs to mend their ways in the interests of all concerned, for such conduct is, in our opinion, beneath contempt, and quite worthy of the severest punishment.

The M.C.C. Dinner.

THE annual dinner of the Motor Cycling Club will be held at the Adelaide Gallery, Charing Cross, on December 6th. Further particulars will be announced later.

Recently Demobilized.

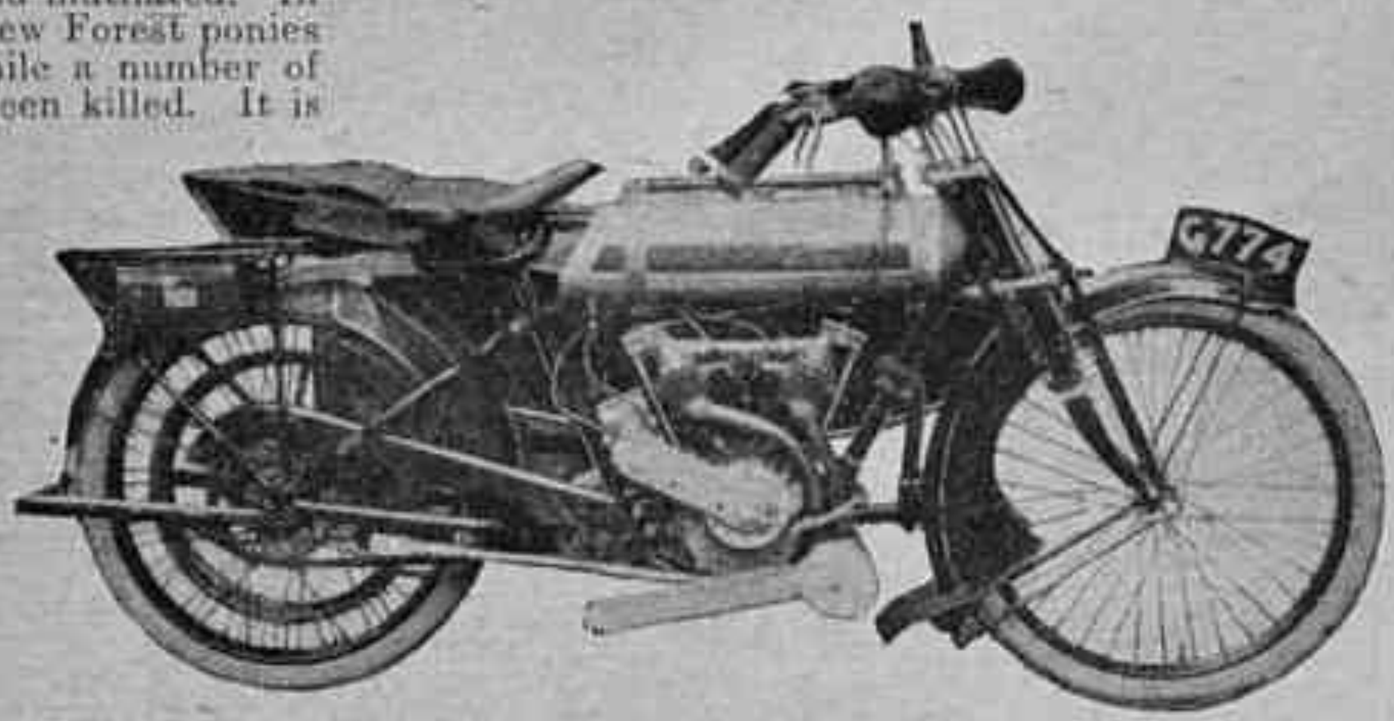
WE recently had the pleasure of meeting Mr. "Billy" Elce, who has recently been demobilized, and accompanying him to his motorcycle depot in Bishopsgate Avenue, where we inspected a really excellent assortment of new machines. "Billy" Elce will be remembered as a successful competition rider on the road and at Brooklands, the majority of his successes being on Rudge machines. He related to us several exciting experiences he had whilst serving as a D.R. in the East. Plenty of foreign service has fallen to his lot, principally in Egypt, Palestine and Syria. He was in the last successful push in which General Allenby forced the Turks to capitulate.

Of Interest to Employers.

IN a conversation with an official of the Appointments Department, Ministry of Labour, recently, we were interested to learn of the valuable work which has been done in finding employment for demobilized officers and soldiers in various branches of the engineering trade. A large number of these men, having obtained a certain amount of experience in car and motorcycle work whilst in the army, are anxious to obtain positions such as apprentices in the works of motor and motorcycle manufacturers and garages. The Ministry of Labour ask us to point out that if the manufacturers are willing to take on demobilized soldiers in civil employment, they will try to obtain for the men a maintenance grant under the Government Training Scheme. This grant, in some cases, would amount to £150, which would continue for a year or two, whilst the apprentice is completing his training. Manufacturers and garage owners interested should communicate with the Appointments Department, Ministry of Labour, Horrex's Hotel, Norfolk Street, Strand, W.C.

A Business Amalgamation.

WE have been officially informed that the businesses of Brown Bros., Ltd., London, and James Thomson and Son (Motor Factors), Ltd., Edinburgh, have amalgamated. Mr. J. Albert Thomson, chairman and managing director of the Edinburgh Co., becomes one of the managing directors of Brown Bros., Ltd., while several of the London company's directors will join the Edinburgh board.



An advance model Edmund constructed for one of our readers. It has an improved type of Edmund spring frame, 3½ h.p. M.A.C. engine, and Enfield two-speed gear.

Triumph's War Work.—What India Thinks of the Motor Scooter.

Wonderful War Work.

DURING the war the Triumph Cycle Co., Ltd., supplied the British War Office with nearly 20,000 motorcycles, and the French War Office with 2,000 machines. They also supplied the French Army with 5,000 sidecars, and 1,000 bicycles were provided for the British and French Armies. The Triumph men also did their duty, for 250 enlisted voluntarily during the early stages of the war, and 700 attested under the Derby scheme, of whom 233 were called upon to serve in the Forces. Of this number 67 were killed, and over 150 were wounded or invalided home. This statement was made by Lord Leigh, the chairman of the company at a recent meeting.

FORTHCOMING EVENTS.

OCTOBER.

25—**LIVERPOOL M.C. Open Trial for the Reliance Cup.**
25—BIRMINGHAM M.C.C. Sangster Cup Reliability Trial.
25—SHEFFIELD N.M.C.F.U. First Winter Social.
26—ILKESTON and D. M.C.C. Run to Chatsworth.
26—ROCHESTER, CHATHAM and D. M.C. Run to Bodiam.

NOVEMBER.

1—**S. BIRMINGHAM M.C.C. Open Reliability Trial for the Palmer Cup.**
7-15—**OLYMPIA CAR SHOW.**
11—**MANCHESTER M.C. Open Trial.**
24-29—**OLYMPIA MOTORCYCLE SHOW.**

An Important N.M.C.F.U. Meeting.

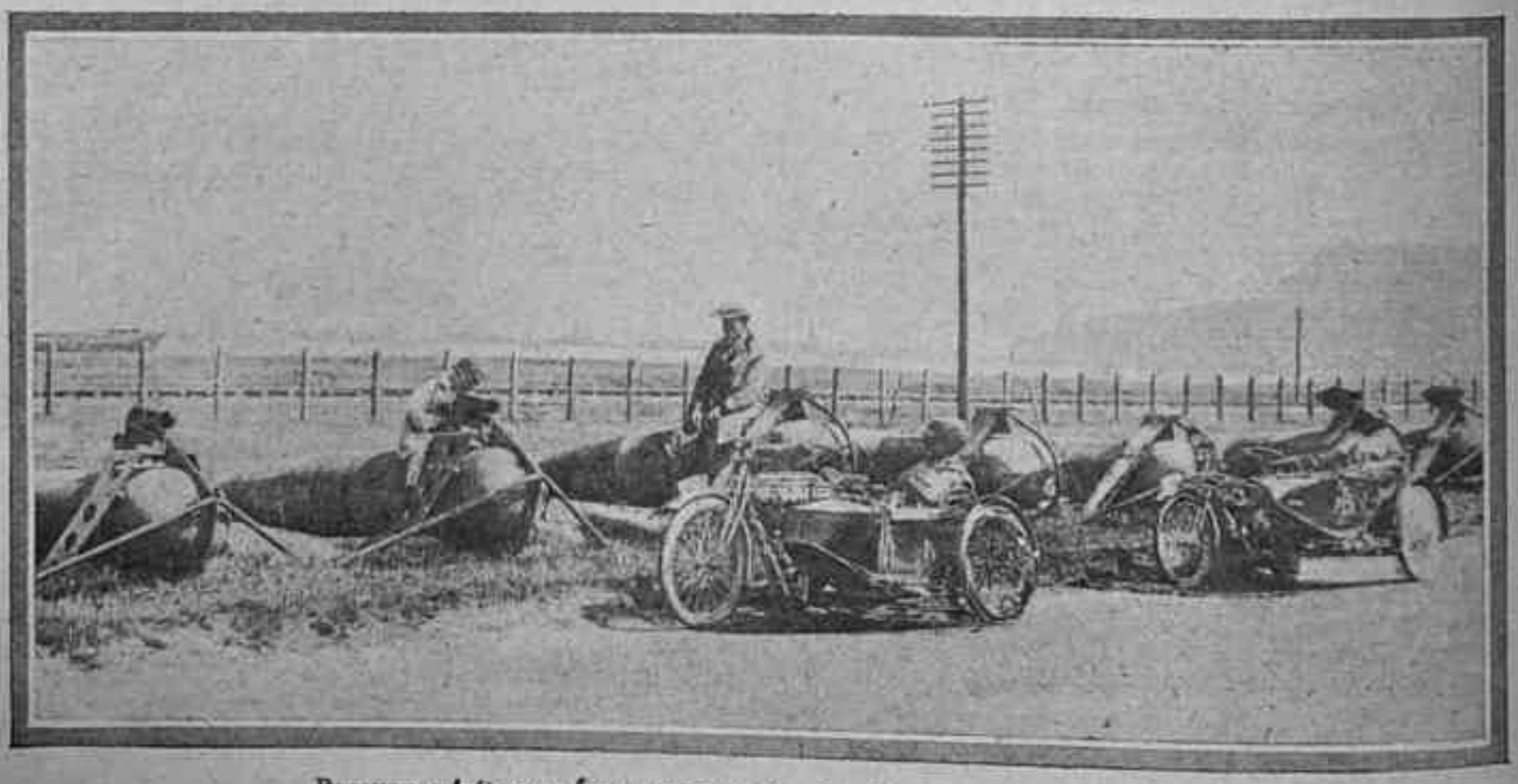
THE Birmingham branch of the N.M.C.F.U. have a combined run with the Coventry section to Lichfield on Saturday, October 18th the meet being at the Stonebridge Hotel at 2.30 p.m. On reaching Lichfield a meeting of vital interest to all members will take place in the George Hotel. The meeting will be addressed by Mr. W. Henshaw, chairman of the N.B.A., Mr. E. S. Shrapnell-Smith, C.B.E., president of the N.M.C.F.U., and Mr. A. W. Torkington, National Chairman and Executive Council. The Coventry members will meet for this run at Pool Meadow, Coventry, at 2 p.m. All motorcyclists are invited to be present at the meeting.

The Daily Press and Motorcyclists.

THE attitude assumed by *The Daily Mirror* in regard to motorcyclists during the railway strike seems to us extraordinary, but it is possible that it is another case of a little knowledge on the subject being a very dangerous thing. Our contemporary came out with three bold headlines "Not Wanted," "Why Motorcyclists should keep off the main road," and "A Danger and a Nuisance." In the accompanying text they say "that except for emergency work the motorcyclist with sidecar is not wanted just at the moment on the roads given up to traffic vastly more important than anything he can do himself. Three times the lives of a *Daily Mirror* volunteer and his passenger were in imminent danger. So the obvious warnings are: Keep off main roads if you must drive a motorcycle for long distances, do not take a passenger, and ride solo if possible." Did not motorcyclists do their bit as much as anyone?

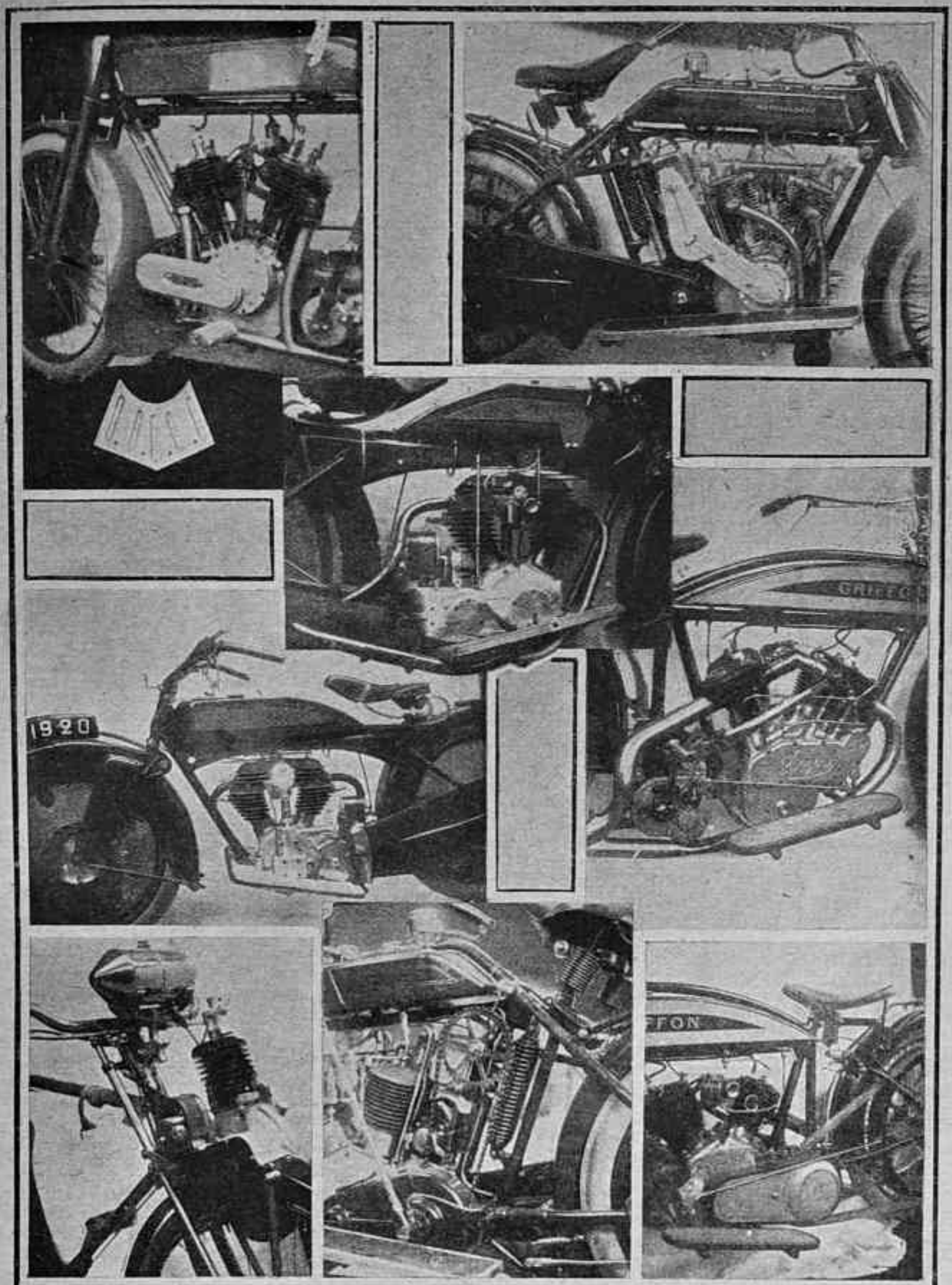
The Scooter in India.

MOTORING is making enormous strides in India, and recently a scooter made an appearance in Calcutta, where, after examination by the Superintendent of the Motor Vehicle Department, it was passed for registration. Messrs. Wheeler and Co., of Calcutta, have secured no fewer than seven of these miniature motors for service. A description of the scooter in the Sunday edition of *The Advocate of India* is rather amusing. Our contemporary says:—"It is a small vehicle, simple in mechanism to be ridden in a standing posture. It has a handle with two wheels at the two ends of a plank about 3 ft. long, the front and back diameter of which is about eight inches. The engine, petrol, motor and handle, and tool or tiffin box is in the middle, and the tail lamp, is on the back wheel. The petrol tank, on the front wheel, contains about three-fourths of a gallon of petrol. The tyres are pneumatic, and if given full speed, will run 183 miles an hour"!



B23 Paravanes left over from the war line the Weymouth-Portland road.

INTERESTING EXHIBITS AT THE PARIS SALON.



Top, left: The Peugeot engine. Top, right: The spring frame Autosacoche, with M.A.G. engine, dynamo lighting set and three speed Enfield gear. Centre: The Louis Clement, showing casing for rotary valves, and the Griffon spring frame machine, with scientifically designed exhaust pipes. Bottom: A two-stroke unit for bicycles; the Autosacoche springing and gear lubrication; and a near side view of the Griffon with Anzani engine.

B29

AT THE PARIS SALON.

Many Interesting French Motorcycles on View—Novelties in Design—English Makes Well Represented.

THE great strides which have been made in motorcycle construction by French manufacturers since the outbreak of war is the most noticeable feature of the fifteenth Paris Salon. Very great ingenuity has been displayed in the construction of the various machines and that lightness of construction and poor finish which used to distinguish French machines is not now to be seen. Practically the whole of each machine, including the engine, is constructed in the makers' own works instead of being assembled, and the efforts of the French manufacturers to produce a comfortable, reliable and economical machine seem to have met with success.

The scooter does not appear to enjoy the same popularity across the Channel as in this country, as only one example was shown, this being provided with a small single-cylinder air-cooled engine which drives the rear axle direct.

The English Representatives.

The English makes were creditably represented by the Triumph, Douglas, B.S.A., Matchless, Rover, Hobart, P. and M. and the A.B.C. Arrangements have been made for the manufacture of the A.B.C. motorcycle in France, and the destinies of this machine in that country are in charge of Monsieur Graeme Fenton, the well-known competition rider.

Two examples of the 4 h.p. Triumph were staged, fitted with the new gear lever operating just below the saddle. The Douglas exhibits were made up of examples of the 2¾ h.p. and 4 h.p. with sidecar. The two models of the spring-frame Matchless with sidecar in a corner of the gallery were always surrounded by large crowds.

A 4 h.p. Twin Indian Appears.

The new 4 h.p. Indian which appeared at the Paris Salon for the first time affords a most interesting example of the medium weight machine. The engine dimensions are 70 mm. by 78 mm., giving 596 c.c. The frame is duplex: just below the steering head two down tubes are provided, which are spread at the bottom to afford a seating for the engine, and then carry on to form the chain stays. A new type of spring front fork is provided, operating on the same principle as heretofore, but a modified form of leaf spring is employed. The chain connecting the engine and the countershaft gearbox is enclosed in a massive casing. The final drive is by chain protected by a half-guard on the top run. Internal expanding brakes are provided. On the same stand are exhibited two examples of the latest model Powerplus.

A Rotary Valve V. Twin.

The most interesting of the French exhibits is undoubtedly the Louis Clément motorcycle. It is rated at 4 h.p. and has a twin-cylinder air-cooled engine set fore and aft in the frame. Connecting both cylinder heads is a circular ribbed casing which contains a rotary valve driven by bevel gears from the crankshaft, the whole of the drive and valves being totally enclosed. This rotary distributor has special ports cut therein which at the correct moments put the combustion chambers in connection with the carburetter or the exhaust pipe and close the openings to the cylinders during the power stroke. The gearbox and crank chamber form one unit, the whole being enclosed in an aluminium casing. Three speeds are provided and a simple form of clutch, while the final drive is by an enclosed chain to the rear wheel.

The Clement Frame

Next to the engine, the most interesting feature of the Clement machine is the frame, which is of combined pressed steel and tubular construction, forming a very rigid, yet light unit. Massive internal-expanding brakes are provided at the front and rear and a neat form of spring fork employing a laminated cantilever spring is fitted. At the rear, the saddle is supported on C laminated springs and the whole machine, while looking rather massive, is nevertheless very light.

Interesting Machine by Bleriot.

The famous aviator and aeroplane constructor, Monsieur L. Bleriot, has now turned his attention to the construction of a motorcycle, and the first example is shown at the Salon. The engine is reminiscent of the old Werner, as it is provided with two vertical air-cooled cylinders set side by side. It is rated at 4½ h.p., 60 mm. by 88 mm., and the power unit has incorporated with it the gearbox, which provides two speeds and a clutch. Two models are made, practically identical, except that the second model has a spring frame. Disc wheels are provided as standard and both brakes are of the shoe pattern acting in the groove of the rear belt rim, the final drive being by belt.

The New Three-speed Motosacoche

An entirely new Motosacoche sidecar machine possesses several distinct features of originality, but perhaps the most striking is an ingenious modification of the Enfield gear, so that three speeds are obtained.

It will be remembered that in the original Enfield gear two chains are employed from the engine to the countershaft, either sprocket on the latter being capable of being locked thereto by means of expanding clutches. In addition to engaging one or other of the gears, these locking devices also acted as a clutch.

On the 1920 model Motosacoche three chains are employed from the engine to the countershaft with three corresponding clutches. The different gears are controlled by a lever mounted on the tank, a neutral position being provided between each gear notch. The final drive is by a single chain enclosed in a chain case.

A second point of interest is that detachable wheels are provided, the withdrawal of a centre bolt in each hub allowing the wheel to be detached, without interfering with the drive.

The seat pillar and footboards are sprung, a stout coil spring set behind the saddle tube taking the rider's weight.

The engine is an 8 h.p. M.A.G. provided with an Amac carburetter. Both brakes are of the shoe pattern acting on dummy belt rims clipped to the wheel spokes. Neat and rigid chain cases are fitted to the whole of the transmission. Starting is by a chain-driven hand starter.

On the show model a lighting dynamo is fitted, mounted neatly just in front of the seat pillar and driven by chain from the engine shaft.

Arrangements have been concluded whereby the Motosacoche machine will be manufactured in

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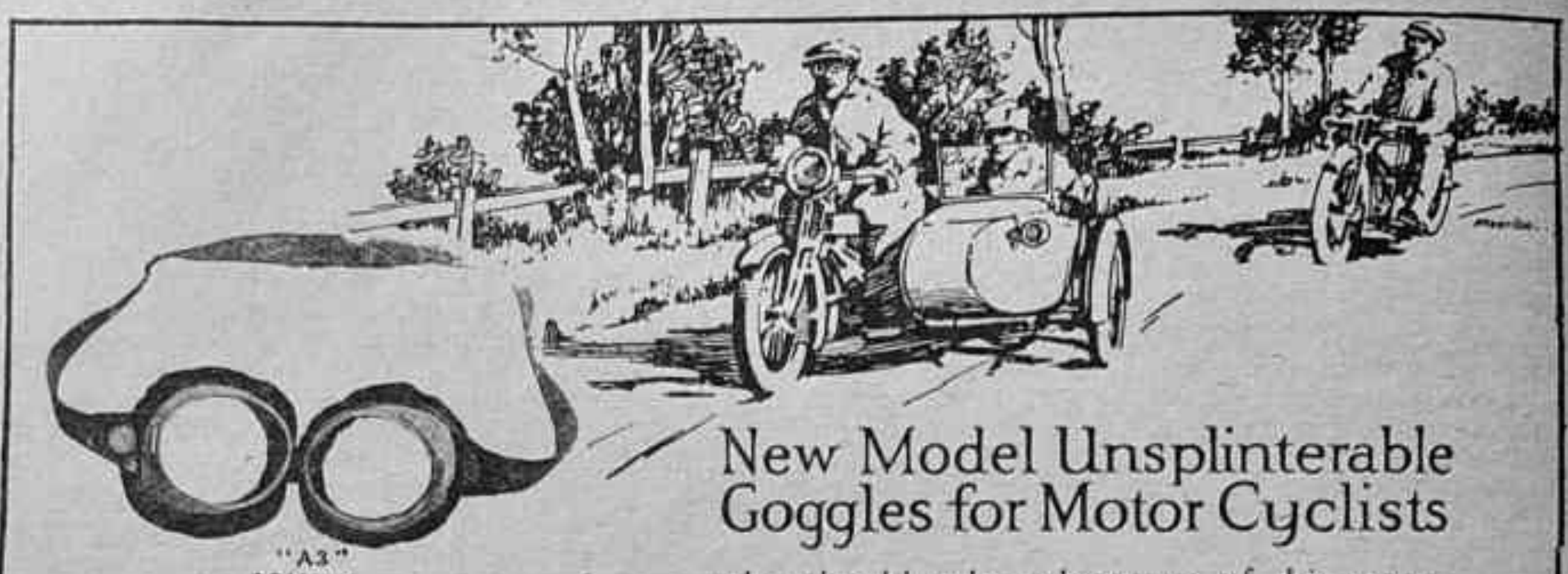

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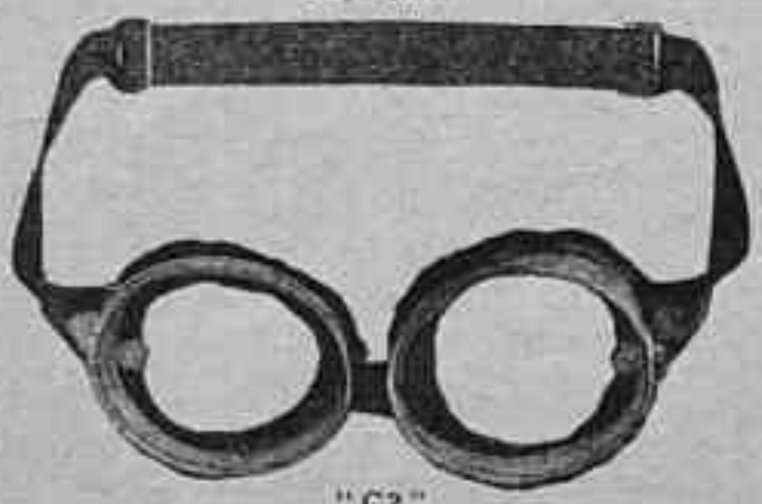

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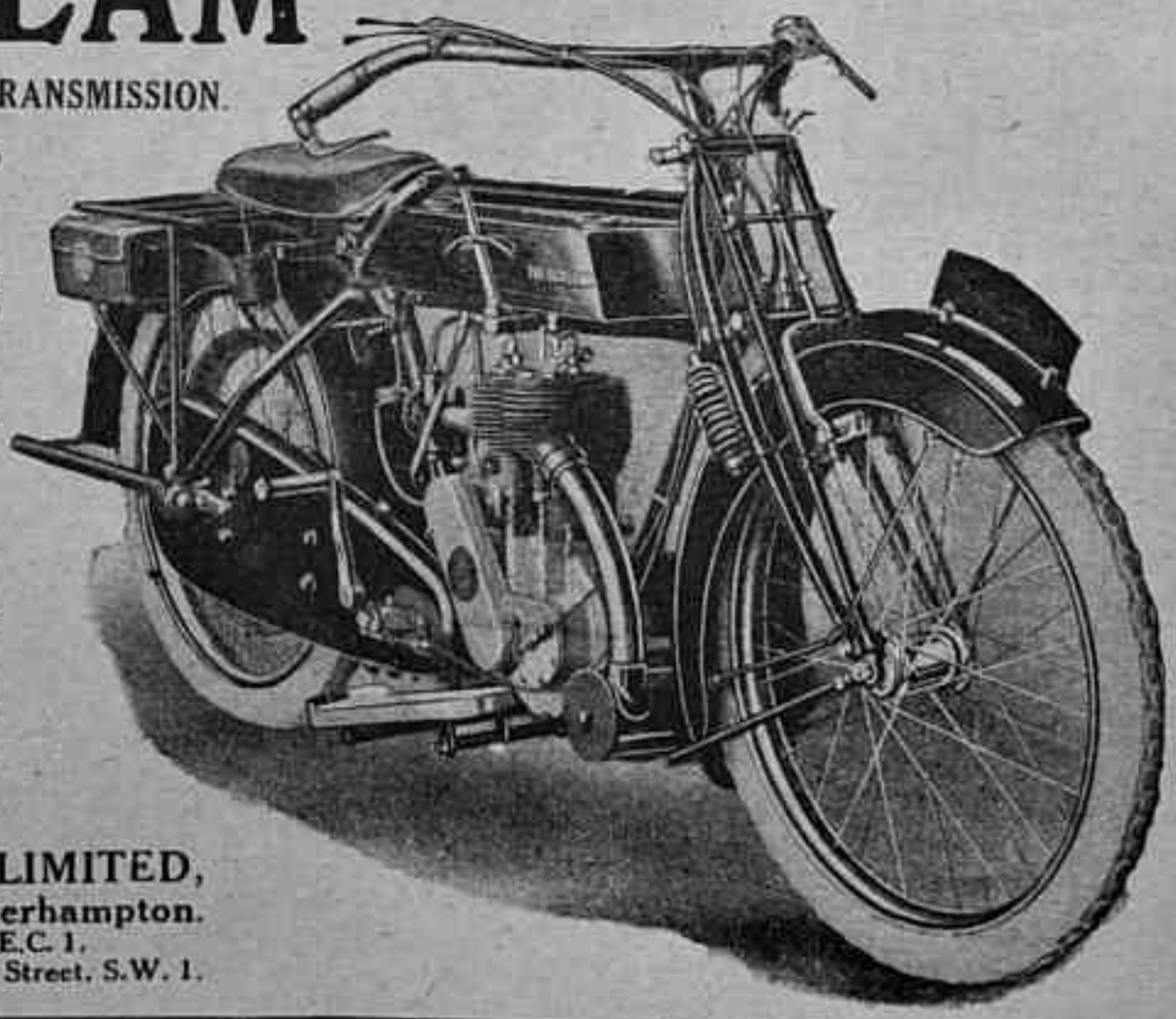

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At the Paris Salon (contd.).

France. Two models are staged, the 4 h.p., which retains the old title of "Motosacoche," and the 8 h.p. sidecar machine, which is now to be known as the "Autosacoche." The larger model is described elsewhere in this issue. The 4 h.p. is very similar, being fitted with 500 c.c. M.A.G. engine, three-speed gear, working on the Enfield principle, and final chain drive. The seat pillar and footboards are sprung at the rear.

The Georges Levy.

In spite of its comparative recent introduction to English motorcyclists, the G.L. has already obtained a considerable reputation in England. Three excellent examples of this machine were staged, the most noticeable feature being the wonderful finish of all metal parts.

The A.B.C.—French Version.

The first A.B.C. motorcycles, to be manufactured in France, are staged in the gallery. These differ from the English models in the following particulars: The frame is stouter and heavier springs are fitted fore and aft. A Zenith automatic carburetter is provided and a front wheel stand is also fitted. It is manufactured in France by the Gnome and Rhone Co., who are also producing a high-powered touring car. The standard sidecar supplied is also of stouter construction than that for the English market, this being necessitated by the poorer quality of the roads in France.

A Spring Frame Griffon.

The Griffon concern are concentrating this year on large twin-cylindered machines, which are rated respectively at 6 h.p. and 8 h.p. An attractive dropped frame is provided with a neat form of springing for the rear portion. The arrangement is somewhat similar to that employed on the new Chater-Lea, the whole of the rear frame being hinged at the end of the chain stays, and the motion of the rear wheel being controlled by a leaf spring set vertically behind the seat of the saddle pillar. A Sturmey-Archer three-speed gear is fitted with chain drive to the countershaft and belt to the rear wheel.

The Re-appearance of the F.N.

In spite of the damage suffered to their factory in Belgium during the war, the F.N. have a very good show of machines. They are practically identical with their pre-war models and consist of a big four-cylinder with mechanically-operated valves on either side, and gear drive to the rear wheel and a 1¼ h.p. lightweight, which is also provided with gear drive.

From Italy.

The only example of Italian motorcycle construction is to be found in the Bianchi, which is a 4 h.p. single-cylinder machine, 72 mm. by 112 mm., fitted with three speeds and final belt drive.

The Lightweight Moto-Reve.

One of the first lightweight machines to become popular in England was the Moto-Reve. These machines are still manufactured in France, the makers keeping rigidly to the idea of a very light weight machine. Two models are manufactured, the larger having a twin-cylinder engine, with overhead inlet valves, while the smaller and lighter model has a very well-made single-cylinder engine with both valves set in the cylinder head and operated by vertical push rods.

An 8 h.p. Alcyon-M.A.G.

The Alcyon is another French make which is well known over here. For 1920, their latest model is a big twin, fitted with an 8 h.p. M.A.G. engine, Sturmey-Archer gears and chain and belt drive.

A French H.O. Twin.

A machine which is rather reminiscent of the original A.B.C. is the Magnat-Dupon. This has a horizontally-opposed twin-cylinder, air-cooled engine, with overhead inlet valves. The two gears are combined in the crank chamber casing, and the final drive is by belt.

The Family Machine.

An example of the French manufacturers' attempt to solve the heavy sidecar problem is the Janoir motorcycle. This has a horizontally-opposed twin-cylinder air-cooled engine, three-speed gearbox, and final chain drive. The most noticeable feature of this machine is its comparatively large size and weight with regard to other sidecar machines. It is not intended for solo use owing to its weight, but it is claimed that when fitted to a heavy sidecar it has an ample reserve of power, even when extra passengers are carried on the motorcycle itself.

The Two stroke popular.

The two-stroke lightweight seems to be a popular model in France. Numerous examples of this were shown on various stands, and in most cases they were fitted with English two-stroke engines, the Villiers unit being the most usual.

Attachments.

In the gallery was to be found a fitment known as the Motoporteur. This consists of a sidecar carrying a 3½ h.p. Anzani engine at the rear. This engine drives by belt to the sidecar wheel and the device is intended to be attached to strongly constructed bicycles, thus converting them into passenger motorcycles. As the engine is unfavourably placed for direct cooling, a belt-driven fan is employed to distribute air over the valve ports.

There were several similar motor sets shown for attachment to bicycles to convert them into motorcycles; in some cases these drove by friction off the front wheel, while in others the entire back wheel of the bicycle was replaced by a small motor unit, the engine being carried outside on the chain stays.

Harley-Davidson.

The Harley-Davidson is well-known to the French motorcyclist owing to the extensive use of this make by the American Army in France. The Harley-Davidson stand was not very favourably placed, but room was found for an example of their big twin sidecar machine, and also of the new horizontally-opposed twin which was recently described in *Motor Cycling*.

The Popular Rover.

A late arrival among the representatives of the English makes was the Rover, examples of the 6 h.p. twin and the 4 h.p. single being exhibited. The Rover has done particularly well in competitions in France this year, and bids fair to become one of the most popular English makes across the Channel.

French Six Days' Trial in August.

WE hear that the French Motor Cycle Club is organizing a Six Days' Trial, to be held in August, with Grenoble as a centre. It will be remembered that this Trial was to have taken place in August, 1914. The course will lie over the French Alps, and will provide an exceptionally good test of reliability, as the road conditions are excellent, but the gradients and atmosphere are very trying.

MOTOR CYCLING

The Original Motor Cycling Journal. Founded in 1902. New Series Commenced 1909.

Written, Edited and Illustrated by a Staff of Practical Motor Cyclists.

Conducted by
EDMUND DANGERFIELD.

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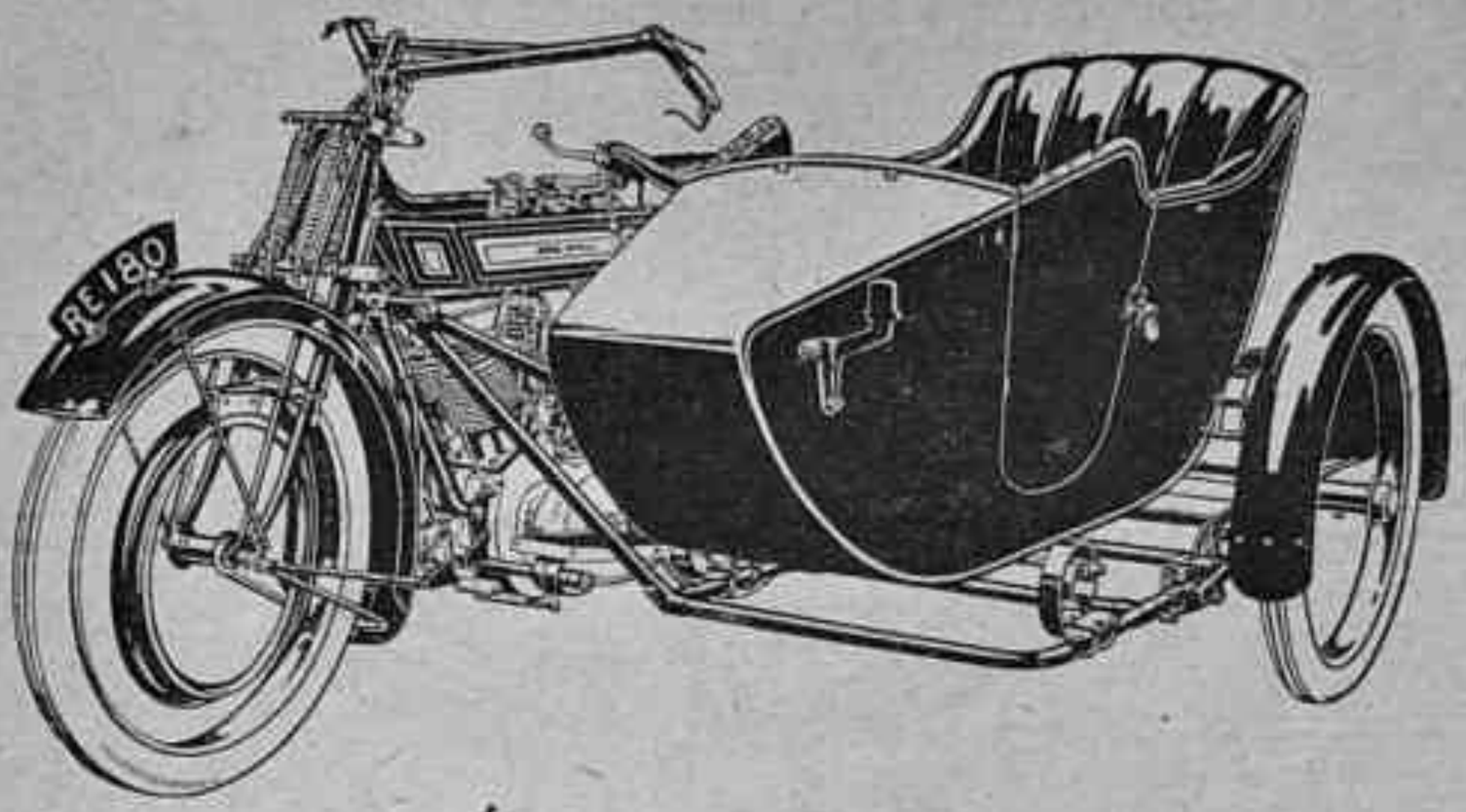
The Future of Club Life.

THE recent decision of the Auto-Cycle Union only to grant 20 permits for open competitions next year (which suggestion was first made in our pages) will have a certain amount of influence on club life in the future. It will be remembered that the A.-C.U. decided to allot the permits for holding open competitions to different districts, and it is uncertain at present whether this will have the effect of causing clubs to amalgamate, or whether the competitions will be run by a joint committee from the different clubs in the district concerned. The question is discussed in our opening article this week. Our opinion, in a nutshell, is that there are *not* too many clubs in the country, but we have certainly had too many open trials in the past, and we share with the manufacturers the view that too many open competitions are a waste both of time and money. It is, of course, the ambition of every club, which has a good following and an enterprising committee, to run open competitions, but unfortunately the state of affairs existing will not permit of this. If every club of any size in the country were to run even one open trial per year, we should have about two events every week-end from January to December, which would, of course, never be authorized. The present season is now nearly over, and our clubs would do well to spend the coming winter months deciding what they will do next year. The possibility of the amalgamation of many clubs has been discussed for some time past, but as a matter of fact we do not expect very much will be done in this way, for the simple reason that it is only in one or two districts, such as in the Midlands and in Lancashire, that existing clubs overlap to such an extent that many useful purposes would be served if this step were taken. The desirability or otherwise of forming one big club for Birmingham and district has often been considered, and many have expressed the opinion that such a thing could not be done owing to a certain amount of friendly rivalry existing between the leading lights of the various clubs. We have no doubt, however, that such difficulties could be surmounted, and would like to point to the case of the amalgamation of the four clubs in the Liverpool district into one powerful body, which, so far as we are aware, has proved perfectly successful. As this matter is fully discussed in our opening article, we will not say more on the subject editorially, except to point out that one of the great advantages of amalgamation would be the formation of clubs sufficiently strong both financially and in membership to open one or two good club-houses.

B36

Clubs are Badly Distributed.

AN examination of our list of existing Motor Cycle Clubs reveals the fact that there are approximately 100 more or less live bodies. We have stated that we do not think there are too many clubs in existence; in fact we are quite certain that there is room for more. We constantly hear from readers in districts badly served, who ask us if we can do something towards promoting a club in their neighbourhood. Several have stated that the Gipsy Club has done much to fill the gap, but its activities are somewhat limited. The fact of the matter is there are plenty of clubs in the country, but these are badly distributed and in many cases overlap. The example in the Midlands is the first which strikes one. Another district well served is that of Lancashire, where, in spite of the amalgamation of all the Liverpool bodies, there are another eight or nine minor organizations. Yorkshire, too, is very well served, there being a dozen clubs in this county, some of which, however, one seldom hears very much about. South Wales is also well served, but here again the vast majority of the clubs are not run on ambitious lines, and their activities are little known, except locally. London and district, considering its population, is one of the worst served localities. The Motor Cycling Club is, of course, the leader, but as a large majority of its members are provincial, and its trials take place all over the country, it cannot really be considered a London club. Of the other organizations situated near the Metropolis few seem to have recovered from the war, and their activities do not compare at all favourably with the Midland clubs. Other counties comparatively well served are Nottingham, Surrey, Kent, Cheshire and Somerset, whilst Hampshire, Worcester, Cumberland, Northampton, Oxford, Derby, Stafford, Essex, Middlesex and Durham have little to complain about. On the other hand there are quite a number of districts such as Leicester, Huntingdon, Buckingham, North Wales, Norfolk, Cornwall, Wiltshire, Shropshire, Hereford, Dorset and Northumberland, where club life is practically non-existent. It is true that in certain of these districts the population is somewhat scant, but we feel certain that in the majority there is room for an expansion in club life which would have a beneficial effect on motor-cycling generally. It is, of course, rather late in the season to talk about forming new clubs this year, but we are convinced that club life needs fostering, and we shall from time to time give it the attention it merits.



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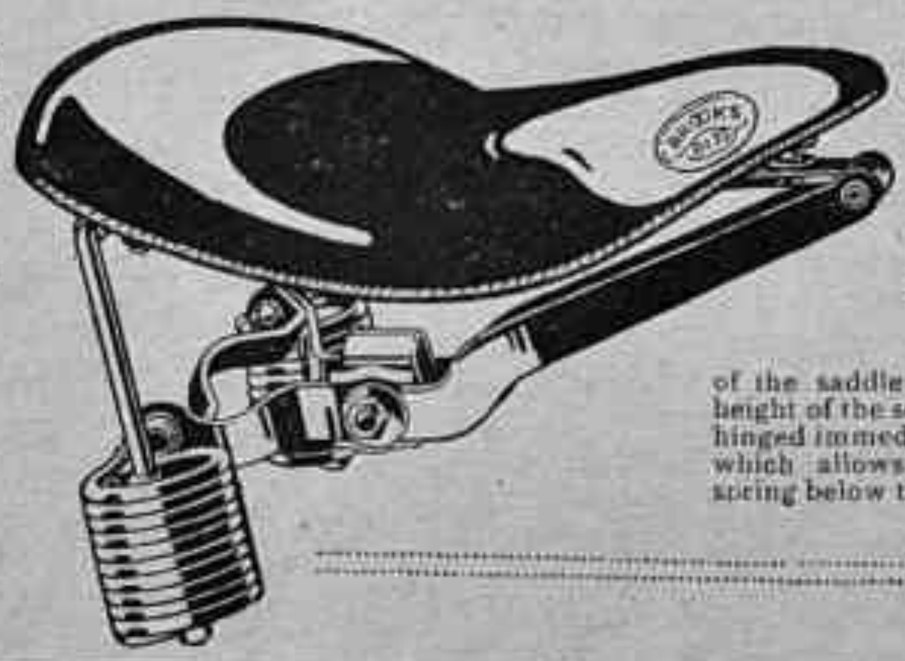

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B38

DO NOT FORGET TO MENTION "MOTOR CYCLING."

TOUR AND TRAVEL.

Comments—Critical and Otherwise—on Diverse Matters.

ONE of the first people I met on arrival at Llandrindod before the recent "Six Days" was a fellow pressman, just demobbed and returning to his old love—trial reporting. In pre-war events he and I used to sit together in the hedge shielded by ponchos and sou'-westers, making illegible marks in damp notebooks, and wondering why we chose occupations which meant so much motorcycling in the rain. Five years elapsed, and we met again, on the same job. Five years of motorcycling in French rain had not cured either of us. We swopped opinions, agreeing (1) that it was good to have trials again; (2) that we were still mad to want to motorcycle in the rain; (3) we were both a little saner, as, being older, we were not *quite* so fond of the sport as we used to be, and (4) would now hesitate before covering a gymkhana in Liverpool, an open trial in North Wales, and a hill-climb in Derbyshire, all in one week-end, and then go back to the office and start work.

* * *

DURING our conversation I was performing some trifling adjustments with the aid of my two favourite weapons, a small Lucas girder spanner and a B.S.A. ditto. I happened to remark that on returning from the war the first thing I had found in my garage was an ancient and rusty Lucas girder. I had hailed it with joy, spent ten minutes with an oil can and rag rendering it serviceable, and it now once more occupies the best seat in my tool roll. "Funny you should say that," remarked my fellow P.M., "as it was the first thing I found on getting demobbed," and he produced the beloved weapon from his pocket. This cemented our friendship.

* * *

BY the way, did you notice how *Motor Cycling* frequently varied in style during the period 1914-1919? I wonder how many guessed the reason? It is this: Six weeks after war had broken out 60 per cent. of the *Editorial* staff of the journal were in khaki. Before the end of 1916 every single editorial man had gone, some never to return. *Motor Cycling's* motto was "Carry on—with the war." Many other newspapers also had "carry on" for their motto, but they did not one and all go to war and still manage to keep their tails up.

* * *

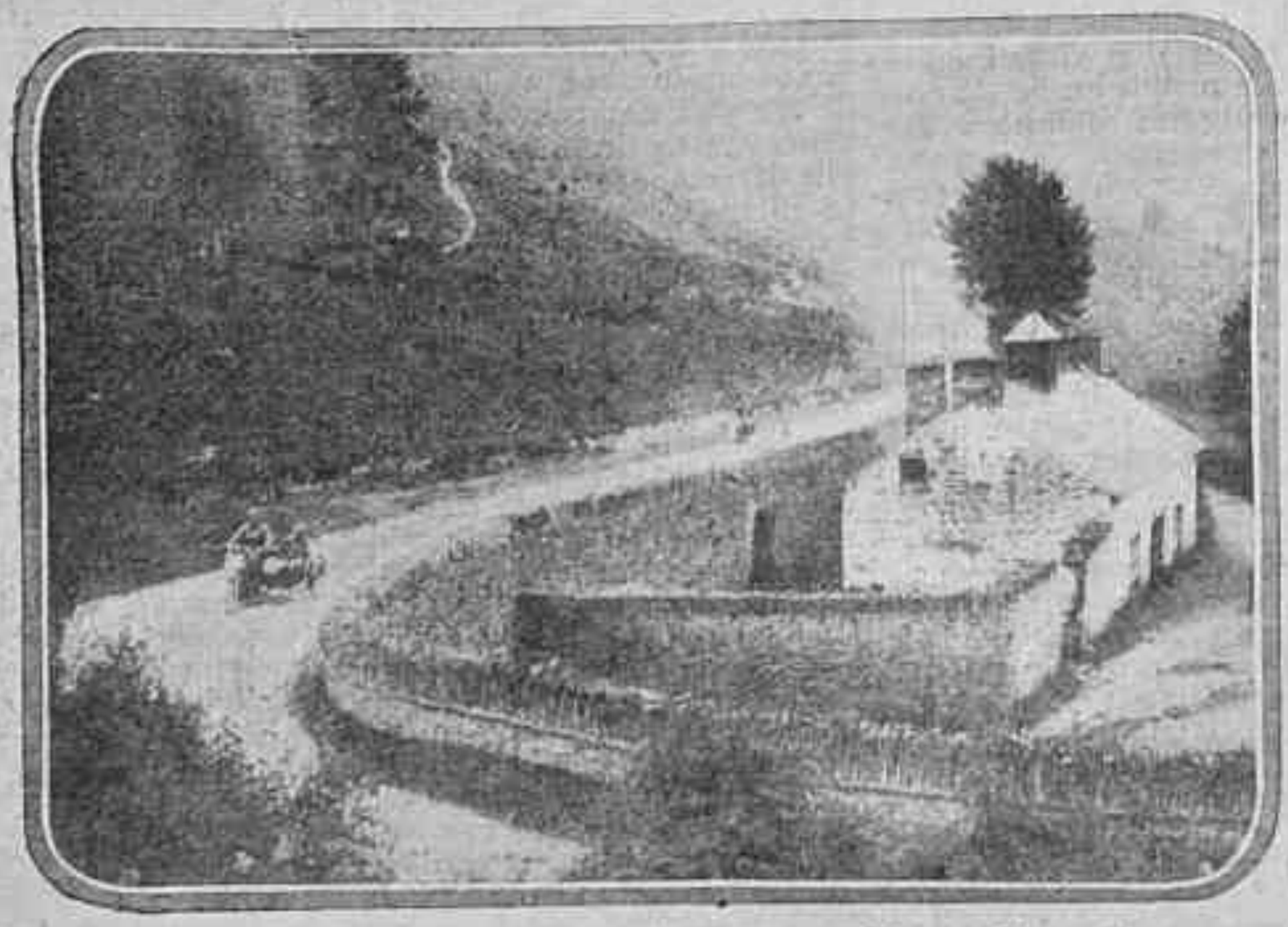
REVERTING to my garage. In 1914 it used to be a model of tidiness. It was clean. I could lay my hand on any tool or spare at a moment's notice. I had quite a fleet of machines in those days, and used to keep a huge cabinet (originally designed for holding phonograph records), to secrete my spares. I had compartments labelled "Amac," "Serspray," "Magneto," "Douglas," "Triumph," "Sunbeam," "Chains," "Tyres," and dozens of others. I could usually supply any friend who called with petrol, carbide and every brand of oil on the market and several that were not; no one ever went away without the spare he wanted or a suitable substitute.

* * *

NOW it presents a lamentable appearance. The spares cabinet is still full, but it contains principally dud plugs, perished generator tubing, straps minus buckles, bolts without threads, tools which will never function again, and cobwebs. That portion of the floor which is not inches deep in mud and grease is occupied with perished tyres, porous tubes, empty carbide tins, and used carbide. I have been meaning to spring clean it for six months, but keep on putting off the evil day. I suppose it is the result of always having someone to do things for one in the Army. I still have many drums of lubricant, but its pedigree I have forgotten, and so dare not use it. If I want to wash down my crankcase I cannot find a pot or pan in which to put clean paraffin. They are all full of perfect skid mixture. It is sad and must be rectified.

* * *

PAUSING to stretch my legs in the middle of decarbonizing and generally tuning an engine the other day, I was amazed to observe the amount of junk I had collected and which was necessary for such a job. I am not a Pelmanist, but think I can remember most of it, which occupied several square yards all round the machine:—Strip of linoleum beneath bike; a stool on either side; bucket of paraffin; brushes for cleaning; rags, of various states of cleanliness; some shellac varnish and brown paper for joints; wire for poking into odd corners; grease; oilcan; boxes for nuts and odds and ends; emery cloth for "easing" things; lathe (adjacent); pipe—to soothe my feelings. Every item from my tool kit was strewn about, and in addition I had collected the following: Mallet; box spanners; scissors; jack-knife; hammer; nails; punches, and needle for measuring jet sizes. The list does not include several special tools which I had to fashion for such jobs as opening out and removing the split pin that held the set screw,



A picturesque spot in Cardiganshire near Yspytty-Ystwyth.

Tour and Travel (contd.).

that held the gudgeon pin, that fitted the bush in the small end of the con. rod, that lived in the crankcase that Jack built!

* * *

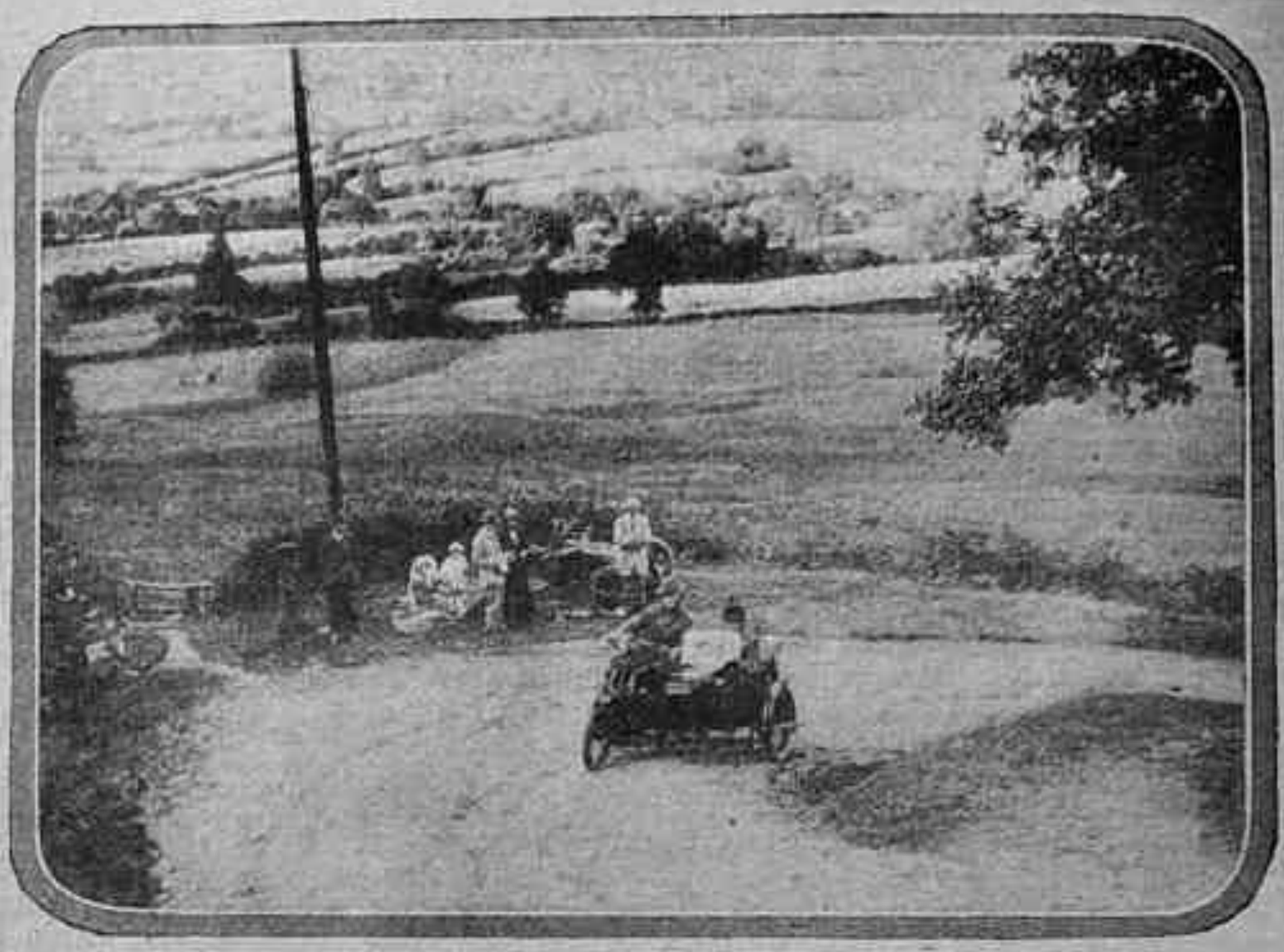
WHEN I was a novice I was told by the friend from whom I bought my first machine that I could easily clean an engine in an hour. It may be possible to remove the cylinder, scrape the piston and put it all back in this time, but on this occasion I spent about five hours on the job. This should, of course, not be necessary, but I spent much time collecting the aforementioned jank, and more making tools to remove that gudgeon pin bush, which has been worrying me for a month owing to being too tight; took a thousandth or two off the piston, which was also tight; fitted new valves and generally made a clean job of it.

* * *

I THINK I shall wage a war against comic gudgeon pin fixings, having owned quite a number of engines in which neither screws nor split pins were necessary. The last mount but one I had down was comparatively simple. A small hole was bored through each end of the gudgeon, and the piston was slightly cut away on each side so that the removal of the split pins was easy. On my present outfit, however, it is no joke taking off the piston. A set screw enters a boss on the inside of the piston, projects through the hollow gudgeon pin, and is held by a split pin, the ends of which have to be opened out (or closed) from the *other* end of the gudgeon. (I was forcibly reminded of the Fable of the Stork who tried to eat his dinner from a shallow bowl.) No tools ever made would remove that split pin which lives comfortably inside the hollow gudgeon pin. Having made two implements which did eventually persuade Mister Split Pin to come out of his Dug Out, I had an even merrier time getting the piston back. The hole through the gudgeon naturally has to mesh with the screwed hole in the boss of the piston. This also needed a special tool to arrange. No big screw driver would get at the set screw, and no small one was strong enough to force it home. Having eventually got it started in its thread I found to my joy that one of my favourite tools aforementioned, viz, the B.S.A. spanner, could just be wangled inside the piston to turn the set screw. Then came the split pin. It went in easily enough but *another* special tool was necessary to turn out the ends. However, one learns *something* every time an engine is dismantled.

* * *

A GLANCE at the majority of machines after a day in soaking rain shows abundant evidence of rust in the pivot bearings of the spring forks. This must reduce the efficiency of the shock-absorbing action very materially. It is also surprising that so few riders trouble to lubricate these bearings. Lubricators are provided, but, as a rule, they take the form of a simple oil hole closed by a spring clip. When kept clean these lubricators work well. The great drawback, however, is the absence of any store of lubricant, and after a few hours in heavy rain the oil is washed away and is replaced by a grinding paste



An A.J.S. combination on the famous test hill—Farlow Bank.

of mud, which soon causes wear to develop, and ultimately affects the steering. On at least one machine I have ridden, a war model Sunbeam, small screw-down greasers were provided in place of the usual oil holes. The cups were filled with thin grease and given an occasional half-turn, particularly in wet weather. The result was a front fork which was at all times adequately lubricated, and into the bearings of which it was impossible for mud to enter. It is attention to these small, but necessary, details that is going to sell a machine in future.

* * *

NEARLY every sidecar driver is invited at some stage in his career either to teach a solo rider to drive a sidecar on his own outfit or to occupy the other person's sidecar the while he does figure eights for the first time. Of the two the second proposition is the more acceptable, or shall we say the less refuseable, inasmuch as whatever happens the damage is not his funeral, at least not often. When the new driver will not take "no" for an answer, the best course is to drive him to the summit of a secluded hill of comparatively gentle declivity, just sufficient to allow the outfit to run down in neutral, and after impressing upon him thoroughly that no balancing is required, allow him to take the handlebars and coast to the bottom, controlling solely with the brake. Four novices out of five terminate their first effort in a right-hand swerve, although there is no reason why yours should not make his to the left, and the instructor should be on the alert to lean forward and take command of the steering so soon as a lamp-post seems to be in danger of being torn up by the roots. When the hill has been negotiated twice on an even keel the sidecar may be retained by the expert and the apprentice permitted to do his best up the hill on first speed. Watch him very carefully when the time comes for him to release a hand to change up, for unless the steering is exceptionally good a large swerve is fairly certain to result. Knowing the controls thoroughly is half the battle, and if the fixings are really quickly detachable on the outfit a few runs on the machine solo will help considerably towards a quicker mastery of the passenger machine.

Tourist.

THE PROBLEM OF

Efficient Springing

(both Front and Back)

is Solved by the "MacLean" System.

Offer to all riders of "Triumph" Motorcycles

WE have recently perfected a new system of Springing that can be adapted to ALL Motorcycles, and before placing our invention on the market we are desirous of obtaining the opinion of three Motorcyclists who ride "Triumph" machines. We have three models all on the same principle, but there is a slight difference in detail in each model, and to enable us to standardize the article which will ultimately be manufactured we prefer an independent test. All those who are willing to test the "MacLean" Spring should send in their names and addresses with full particulars of the machine, whether Sidecar, Solo, or Lightweight, to Tilston Engines, Ltd. Each of the riders chosen is required to test each of the three models, and send in a report of each Spring. The "MacLean" Spring can be changed over in 10 minutes without any alteration to the machine. We agree to pay £3 towards expenses to each of the testers, and make them a present of a spring when standardized. We are so confident in the excellence of the "MacLean" Spring from the point of view of comfort and safety that we intend to sell the article, when standardized, on a proposition that the money is returned if the purchaser is not satisfied after a month's test.

Manufacturers—

TILSTON ENGINES, LIMITED

ALBION HOUSE, 59-61, New Oxford Street, London, W.C.1.

Some Record!

15 Machines in the A.C.U. Six Days Trial were fitted with the

JOHN BULL BELT

9 of their riders were awarded

Gold, Silver & Bronze Medals

We're proud of that result, because it serves to emphasize how exceptional is the quality of rubber used in our belt: how great is the strength of its core, how unequalled is its flexibility, and how free it is from liability to pull out or stretch.

Ask your Agent to order you a JOHN BULL BELT.

LEICESTER RUBBER CO., LTD.,
LEICESTER.

529A

KING OF MOTOR CYCLES

Sidecar Ideals!

To the mechanical excellence of the Model 77—The Sidecar Single—has been added a new ideal in sidecars, advanced in design, possessing a road comfort hitherto unknown to the sidecar passenger.

The body design is distinctively different to an ordinary sidecar; the coachwork is light but strong, having a steel nose panel to stand the weather of any climate.

The locker and luggage-carrying capacity is all sprung weight, ample space being provided for a spare tin of petrol, and tools under lock and key.

The springing is ideal—cantilever—giving a hammock effect to the passenger's riding position.

For comfort, finish, and style it is ideal.

There are many points worth investigation. Send for details, and consider the King of Motorcycles along with the King of Sidecars.

British Throughout,
and proud of it!

Model 77.
The Sidecar Single

4 h.p. (550 c.c.), 3-speed, chain-cum-belt drive, 28 in. x 2¼ in. tyres, detachable, interchangeable wheels, including sidecar wheel.

REVISED PRICE
(Combination),
£118 18s. Net.

(*Signed*) "Rex"

KING OF MOTORCYCLES.

The Rex Motor Manufacturing Co., LTD.
COVENTRY.

B42 PLEASE REFER TO "MOTOR CYCLING" WHEN CORRESPONDING WITH ADVERTISERS.

THE EDITOR'S CORRESPONDENCE

The Editor is not responsible for, neither does he necessarily agree with, the views taken by correspondents. Both sides of any topic are given equal publicity. A pen-name or initials can be given for publication, but the writer's full name and address must always be sent. All communications should be written on one side of the paper only and be in ink. Envelopes should be clearly marked "Correspondence."

THE SIX DAYS' TRIAL.

More Manufacturers Air Their Grievances.

The Scott View.

We agree with "Tourist" on the majority of points with the exception of the "silence test." In this test our most silent machine was deducted the greatest number of marks, and in our opinion the noisiest one least. With regard to the petrol consumption, we cannot understand how this was checked, but it would be very instructive to have the details published if the figures could be guaranteed. In the examination at the finish reasons for deduction of marks should certainly be given.

H. O. WOOD, Technical Adviser,
THE SCOTT MOTOR CYCLE CO., LTD.

[Dr. Low checked the petrol consumption of some machines unknown to the riders.—ED.]

The A.J.S. View.

We are in full agreement with your remarks with reference to mudguarding and the rider's condition after a day's run. In our opinion the mudguards should be primarily designed to keep the rider clean, and, of course, the mudguards must assist in keeping the machine clean also. If motorcycles are driven through a welter of mud and slush parts of the machine and sidecar are bound to get muddy, but the real test of the mudguarding is whether the rider and the passenger in the sidecar keep clean or not.

A motorcar when travelling over muddy roads will get in almost as dirty a condition as a motorcycle, as an inspection underneath the car would testify after a day's run, but, fortunately, the occupants of the car are enclosed in a body which is between the wheels. We venture to say that if a person rode astride the front mudguard of a motorcar on a muddy day he would not keep very clean, and, virtually, this is the position of the motorcyclist. We certainly agree, therefore, with your suggestion that examining the machine and not the rider is no test of mudguarding.

The consistent driving test was also, rightly, the most universally condemned feature of the whole trial. It is no test of reliability to ask a man to steer a solo machine on a bad hill with a vile surface holding a watch in his hand. We quite agree with "Tourist" that a better method would have been for each competitor to have put up a certain performance on the first day, and to equal or improve upon it on the last day. This would be a real test of maintenance of efficiency.

The brake test was also a farce, because the riders did not know the test was taking place. When descending a steep hill, a rider with indifferent brakes would naturally keep his machine well in hand and go slowly, but the man with really efficient brakes would have more confidence and would more than likely descend the hill at a higher speed. In this case, according to the way the machines were observed, a machine with the least efficient brakes could lose less marks than a machine properly equipped with two powerful brakes.

We cannot agree with "Tourist" that the A.-C.U. are to be congratulated on the silence test. Machines which we know are very silent, compared with the general run of makes, actually lost more marks for silence than machines much more noisy, and although a test of this nature is necessary to eliminate the noisy motorcycle, we think a more accurate method of ascertaining the difference between a noisy and a quiet machine could be devised.

The deduction of marks for condition of machine at finish was also unsatisfactory, and from our own personal knowledge we can endorse what "Tourist" says, that several competitors spent hours examining their machines, endeavouring to discover any faults for which they could possibly have lost marks.

In conclusion, these trials are of no assistance to manufacturers in "improving the breed," if organizers of the trials do not give full particulars of why marks were lost. To say so many marks were lost for brakes, mudguarding, silence and condition of machine at finish simply conveys nothing. The manufacturer should know why the marks were lost. [This will be published in due course, but it is a pity it could not have been done at the time.—ED.]

What the Six Days' Trial has done is to give the impression to the man in the street that only 22 machines out of 111 were capable of getting a gold medal, yet many more machines ran to schedule, climbed all hills, and did all that was asked of them.

GEO. STEVENS, Managing Director.
A. J. STEVENS AND CO. (1914), LTD.

Mr. Norton's Views.

We have read your critical article concerning the Six Days' Trial with interest. Possibly the enclosed copy of a letter sent to the Manufacturers and Traders Union will explain our opinion of the matter.

NORTON MOTORS, LTD.
JAMES L. NORTON.

COPY.

Messrs. The Cycle and Motor Cycle Manufacturers and Traders Union, Ltd.

The Towers,
Coventry.

Dear Sir,—We thank you for your favour of September 25th re the A.-C.U. Six Days' Trial. Commenting upon the various items mentioned consecutively:—

(1) We have nothing to say against the deduction of marks in respect of deviation from schedule at termini, but think a greater margin of time should be allowed for competitors who are ahead of time (obviously the machine under such circumstances being subjected to greater strain), and all time allowance should be plus the grant of 15 minutes given at the morning start; at any rate, up to the luncheon stop, otherwise men are liable to be penalized for an official grant.

(2) The consistent driving test and the system of deduction of marks are, in our opinion, worthless, and the most vexatious incident of the trial. A maintenance of efficiency test on rational lines—although presenting difficulties—would be welcomed by everyone, but repetition driving to a split second schedule is farcical, and largely nullifies the usefulness of the trial as judged by marks awarded or deducted.

(3) Silence.—We are in sympathy with a silence test where the amount and quality of noise are automatically recorded independently of the human element. We would suggest that in this, as all special tests, some definite standard should, if possible, be adopted.

(4) Deductions in respect of final examination.—This examination we consider a very valuable feature of the trial, providing (and this is where the A.-C.U. fail) an explicit reason is given to entrants for the deduction of each mark under this heading. It is not sufficient to deduct a number of marks with the bare statement that they are lost owing to the condition of machine, and manufacturers should insist upon knowing for what particular reason, or for what fault in the

Correspondence (contd.).

machine, each mark was deducted, otherwise the value of the examination is lost.

(5) Character of surface of the roads selected.—The whole trial is presumably for the express purpose of testing frames, wheels, engines, and the motorcycle generally; this being so, we have no fault whatever to find with the road surfaces or gradients, the more severe the course (within reasonable limits) the better will the purpose of the trial be served.

(6) Length of total run.—We do not think the 700 odd miles unreasonable, but feel decidedly of opinion that where the course is particularly arduous as, for instance, on the Friday's run, the days could be with advantage to all concerned materially shortened; 100 to 120 miles is quite long enough, unless it is desired to test the rider rather than the machine, and no day's run should exceed 150 miles. Only the accident of comparatively favourable weather during the past trial enabled many riders to complete the course. Under less favourable weather conditions the physical and nervous strain would have prevented many riders finishing, although their machines may have been practically perfect, and the possibilities for serious accidents on certain parts of the course were very great, owing to the fatigue of the riders after their strenuous day.

Further, special tests, as acceleration, for which it was possible to lose 20 marks, and which was wrongly embodied in the consistent driving test, cannot be carried out other than upon scientific lines, when engine capacity, weight, time, and distance must be taken into consideration. A truly comparative test of acceleration is otherwise impossible.

Brakes.—This test was most unsatisfactory. In the first place, only a certain proportion of the competitors underwent the test on the scheduled hill, and, secondly, the efficiency or inefficiency of brakes was merely a matter of the personal opinion of the judges.

A man who had implicit faith in his brakes descended the hill at a speed which was perfectly safe, although, to an onlooker, appearing fast, whereas the man with inefficient brakes descended the hill slowly and cautiously, relying largely upon his gears for retardation. Apparently the man who did this latter was voted to have efficient brakes and the man who descended faster, with the ability to pull up, was "supposed" to have inefficient brakes. Such are our deductions from conversation with competitors. It has been suggested that certain types of brakes were penalized at the final examination, and also that the final examination was conducted and penalties imposed from the idealist rather than from a practical standpoint.

Apart from the above we consider the general arrangements and conduct of the trial to be good.

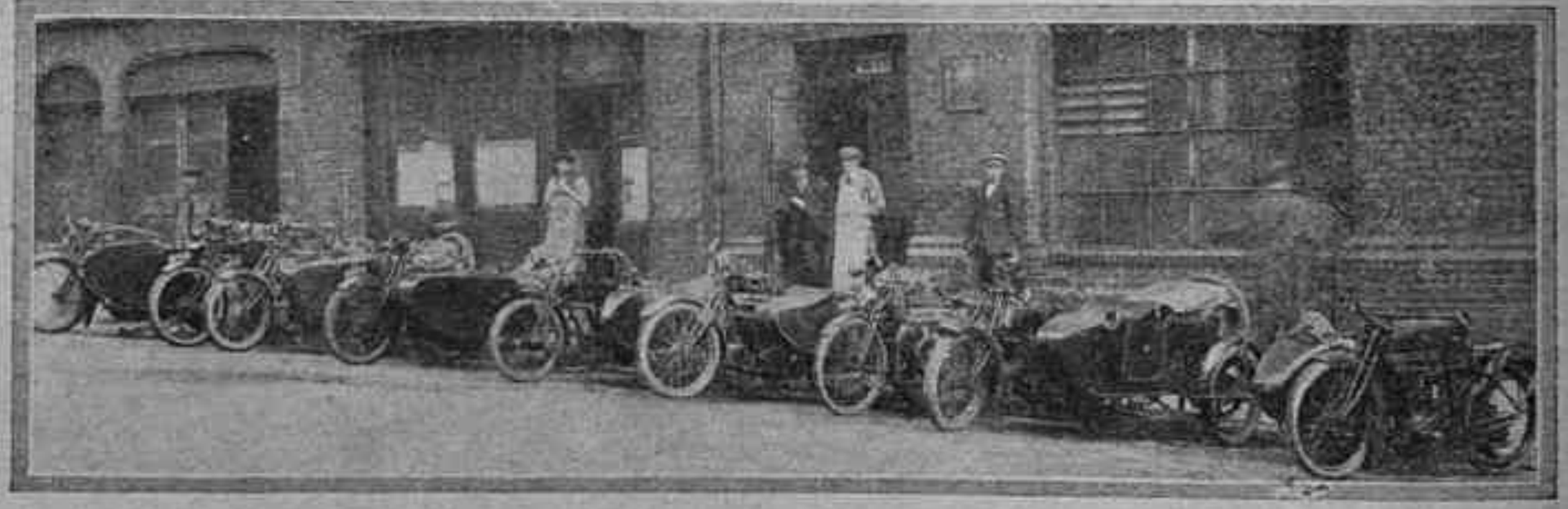
Yours faithfully,
p.p. NORTON MOTORS, LTD.,
J. L. NORTON.

Ariel's Opinion.

In our opinion the consistent driving test was not a test of the machine, and apparently resolved itself into a test of the guessing capabilities of the driver. The silence test did not seem to us to be a fair or satisfactory test, as we understand in several cases three or four machines passed the vital point together. We have neither seen nor heard of any authentic statement that the instrument used was capable of making a fair test of each individual machine under these conditions. (The few machines missed on the first day were tested on the Friday.—ED.)

We did not see the whole of the Ariel machines at the finish of the Trial, but we did see one of them directly afterwards, and it was then in excellent condition. Both brakes were perfect, the engine and gearbox were exceptionally clean, there was not the slightest sign of any leakage of oil, and we could not see the slightest reason to deduct a single mark, yet 18 marks were deducted for brakes, mudguarding and condition of machine at finish, without any explanation which might be useful in future trials or for any improvement in our machines.

J. S. HUBBARD, Sales Manager,
Motor Dept., Ariel Works, Ltd.



A typical week-end scene at the back of our offices. The machines from left to right are a Harley-Davidson s.c., a Blackburne, an A.J.S. s.c., a Douglas s.c., a Kerry Abingdon s.c., a Rover s.c., a Douglas, an A.J.S. s.c., and a Zenith s.c.

Hard Lines!

In common with many motorcyclists, I was unaware that the law required motorcycles to have two separate brakes. I know now, having just learned it by being fined 30s. for being without.

I had removed the brake blocks from the front wheel brake in order to effect repairs, and had momentarily forgotten to replace them. A policeman, from whom I asked the whereabouts of a cycle shop, asked to see my licence, and also asked about the brakes. I explained to him what had happened and showed him the blocks, which, for safety, I had placed in my pockets. He reported the matter, and I eventually received a summons.

Many people to whom I have spoken did not know, and were surprised to learn that motorcycles must have two independent brakes.

Sheepscombe, Stroud. GEORGE JOLLY.

[The Motor Car Acts distinctly state that two independent brakes are necessary, and of such efficiency that the application of either will prevent a wheel from revolving.—ED.]

Twist Grip Control.

I notice in your correspondence columns a letter from Mr. C. W. Pidcock on "Twist Grip Control." I have designed a twist grip which incorporates the popular Bowden wire, but does not in any way interfere with exhaust and front brake controls, i.e., inverted levers. This is the main point about it as the average rider does not want a grip that functions for several operations.

Regarding single lever carburetters, may I add that I also have a fitment for the A.M.A.C., which incorporates a pilot jet, and renders it entirely automatic. This idea has given complete satisfaction during several months duration. I hope to have these fittings on the market at the beginning of next season.

HAROLD ROGERS.

Sydney House, Connah's Quay, Chester.

[We shall be glad to hear from readers who have converted their machines to the twist grip control system, showing by sketches or photos., if possible, how the conversion has been effected.—ED.]

OFFICIAL THANKS TO MEMBERS.

The Home Office,
Ministry of Food,
Ministry of Transport,
Postmaster - General,
and the
Chief Commissioner of Police

have expressed keen appreciation of the invaluable services rendered by Members of the Automobile Association during the Strike period.

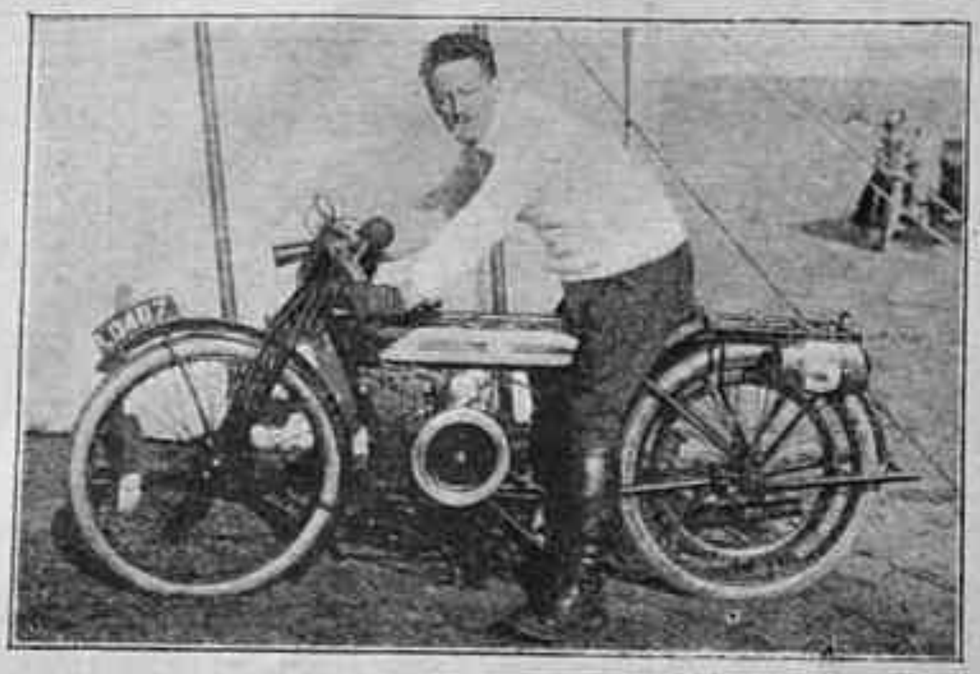
The Executive Committee

cordially thank all Members, Agents and Repairers, and Friends whose prompt and generous response to the Call enabled the Association to be of such value to the State.

W. JOYNSON-HICKS,
Chairman.

STENSON COOKE,
Secretary.

The Automobile Association & Motor Union,
FANUM HOUSE, LONDON.



Douglas

SCOTLAND

The Scottish Speed Championship.

27th SEPTEMBER.

Lightweight Championship 20 miles,
D. S. Alexander - - - - 1st.
Private Owners, 6 miles, A. E. Wills 1st.
Open class, 1 mile - - A. E. Wills 1st.

Swiss Reliability Trial.

3rd and 4th AUGUST.

500 kilos. EXCEPTIONALLY STRENUOUS COURSE.

89 Started - 19 Retired.

Class 2. H. Bavaud 1st, on 2¾ h.p. Douglas.
Class 6. Ch. Cossetto, L. Hutzli } 1st, on 2¾ h.p. Douglas.

ALL WITHOUT LOSS OF MARKS

ALL 1914 MODELS

SWITZERLAND

M. Cossetto rode the same machine that won the "Tour du Leman" Trial in 1914.

FRANCE

Circuit des Quatre Cantons

ST. ETIENNE.

350 c.c. class - W. Davis, 1st -

Circuit Ceinture de Paris

207 KILOS.

350 c.c. class Douglas riders. 2nd and
750 c.c. class „ „ 2nd and

DOUGLAS MOTORS

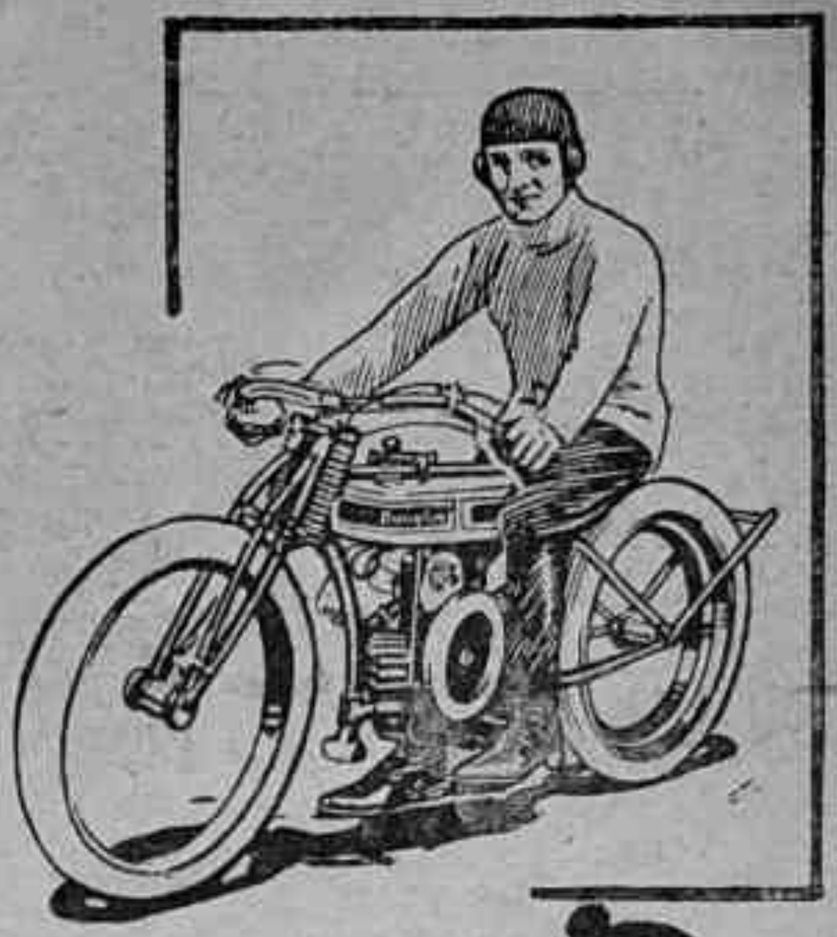
KINGSWOOD, BRISTOL.

39, Newman Street, London, W.1.

Paris Depot: 190, Boulevard Pereire

glas

VICTORIES GALORE



SOUTH AFRICA

JOHANNESBURG TO DURBAN.

The Great Event of the South African Motorcycle World.

421 MILES OF APPALLING ROAD SURFACES.

Percy Flook, on a 2¾ Douglas, 1st. 12 hours 45 minutes = 33 m.p.h. average.

Two other Douglas riders finished the course.

NCE.

re Departments.

14th SEPTEMBER.

Davis, 1st - 2¾ h.p.

---

ure de Paris.

21st SEPTEMBER.

riders. 2nd and 3rd.

" 2nd and 4th.

Compeonato de Santander

115 MILES. 24th AUGUST.

350 c.c. class. Ignacio de Arana, 2¾ h.p. 1st.

500 " " " " " " 1st.

750 c.c. class. Justo Somonte - 4 h.p. 1st.

being awarded Silver Tea Service, presented by H.M. KING OF SPAIN; Silver Cup of the "Conde de Casa Puente"; and the "Vacuum" Silver Cup.

The machine was a 1913 model.

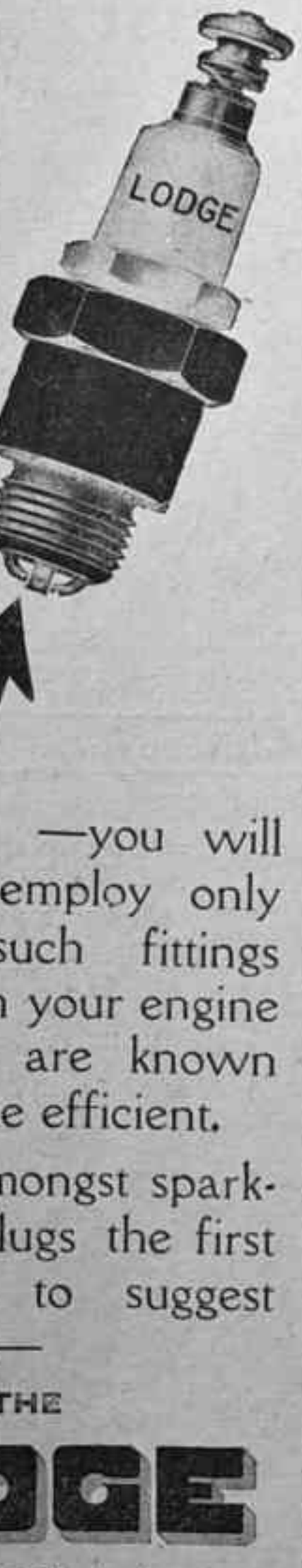
SPAIN

OTORS, Ltd.

BRISTOL.

Paris Depot:
190, Boulevard Pereire.

If you are aiming . at . . efficiency



—you will employ only such fittings in your engine as are known to be efficient.

—Amongst sparking plugs the first name to suggest itself is—

THE

LODGE

The Standard Model (C3) is the type to use for all normal European engines.

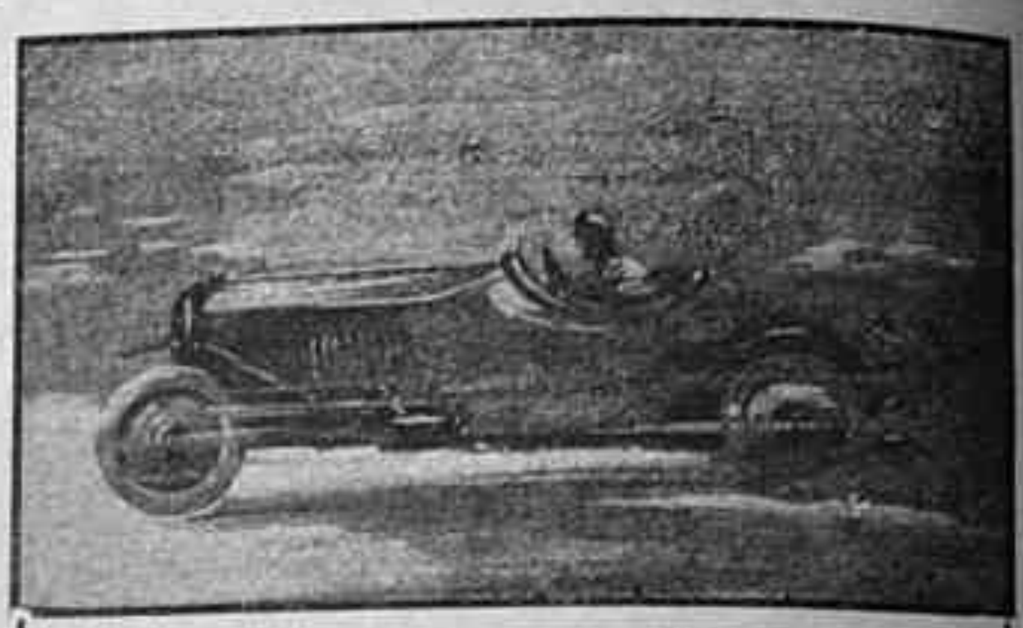
Packed in sealed red metal box, Price 5/-

Of all high-class dealers.

The LODGE SPARKING PLUG Co., Ltd., RUGBY.

B48

PLEASE REFER TO "MOTOR CYCLING



SPEED

TEST National Benzole. Fill up with the best petrol and run your car up the steepest hill you know. Note the top speed you get out of the petrol. Then fill up with National Benzole (N.B.A. Standard Specification) and try the same hill.

You will notice the higher speed—you will feel a greater pulling power, and you will appreciate the sweeter running on National Benzole.

National Benzole is the British Motor Spirit. It yields 20 % more power or mileage per gallon, and is cheaper to buy.

National Benzole

In case of difficulty in obtaining National Benzole, write to

The National Benzole Association

Temporary Offices: 84, Horseferry Road, Westminster, S.W.1.

NBA

WHEN CORRESPONDING WITH ADVERTISERS.

Correspondence (contd.).

The James in the Six Days.

We should like to call attention to the statement made in your advertising pages by one of our competitors, that their single-cylinder sidecar machine, awarded a gold medal in the recent Six Days' Trial, was the first single-cylinder sidecar machine to gain full honours in any Six Days' Trial. This statement is quite incorrect, as in the previous A.-C.U. Six Days' Trial, held in 1914, Mr. T. Stevens, driving a 4½ h.p. single-cylinder James and sidecar, gained the maximum award, a gold medal, being the only single-cylinder sidecar machine awarded a gold medal in the A.-C.U. Six Days' Trial that year. THE JAMES CYCLE CO., LTD.

The Inland Revenue Tax.

I have just read Mr. J. Orme's letter in your issue of October 1st, and should like to comment upon it. He has purchased a new combination, which must have cost at least £120, and has paid the Revenue of £1, which covers the machine until the end of the year. Apparently he thinks it should be 10s. or even less for the latter half of the year. That is what his idea amounts to, for then he would effect a saving of 10s. or more, a truly enormous saving when over £100 is concerned! Doubtless, had the manufacturers' price been £5 or £10 more, he would have paid it and have had no "grievance."

Your correspondent evidently wants to remind the Government that they have not yet increased the Revenue by asking them for a rebate on the present amount.

Vine Gardens, Dovercourt. A. J. SMITH.

Are American Products Superior?

In reply to "Exhaust," I may say that while I agree with most of his remarks about American machines, I differ from his statement that "English machines have the material." Admittedly the majority have, but I assume that your correspondent means to infer that American machines have not. If so, I would much like to have shown him the bearings and all inner parts of a 1914 Indian I disposed of three years ago, after it had done quite 6,000 miles. The working parts showed absolutely no signs of wear. I now possess a Powerplus Indian, and all parts are as new after many hundreds of miles. "Exhaust" also says:—"Whereas a 1910-11-12 Triumph, Enfield, etc., is a fairly common sight, one seldom sees an American machine on the road of over five years of age." Now, how many American machines were over here compared with Triumphs and other makes five years ago? I venture to state that, had there been as many Indians and other American machines on our roads in 1910 as there were good British makes, there would be just as many American machines standing up to the wear and tear.

Like many others, I am obliged to have an American machine, because I cannot find a British one possessing the good features and the points to suit my requirements. These need not be mentioned, as one with a very slight knowledge of motorcycles need only look over an electrically-equipped spring-frame model Powerplus Indian to find them in abundance. POWERPLUS—AY2539.

The Great North Road.

I have recently been trying to ascertain what towns the Great North Road passes through between London and Edinburgh. Most people whom I have asked seem to agree with me that it goes through Stamford, Grantham, Newark, Retford, Bawtry and Doncaster. Some say it goes via Tadcaster to York and then to Boroughbridge. The majority, however, maintain that it misses Pontefract and goes through Wetherby and Boroughbridge to Scotch Corner. Which of these two routes is right? Again, some say it goes from Scotch Corner to Piercebridge, missing Bishop Auckland, and, passing through Neville's Cross, Newcastle, Morpeth, Alnwick, Berwick, and so to Edinburgh. Others say that after passing Scotch Corner the road is to Darlington and Neville's Cross, and then follows the last-mentioned route.

SMILING DAWN.

Benzole and Oil Consumption.

Have any of your readers made any note of the comparative oil consumption of identical machines using petrol and benzole? Whether the undoubted superiority of benzole as a solvent is responsible for thinning of the oil (the machine on which the increase in oil consumption was most noticeable was a two-stroke) or what the reason may be I cannot say, but I have found that an engine running on benzole certainly uses more oil. A two-stroke I have owned this season never reached 40 m.p.h. on the level with petrol, while with benzole and the same carburetter setting, but with the air lever slightly more closed, it would touch 45 m.p.h. and make a much better average over a long distance. A four-stroke of equal horse power gave a similar improvement in maximum and average speed, but was more difficult to start from cold than with petrol, while it took two or three minutes to pick up its full power.

With both machines, however, oil consumption increased slightly with benzole as the fuel, the basis of setting in each case and with each fuel being a faint smoking from the exhaust. REVS.

The Appointment of A.-C.U. Repairers

I note in your issue of the 8th inst. a letter from Mr. F. K. Little regarding the appointment of repairers by my Committee. Such a letter leads one to think that the method employed in the selection of suitable repairers is not fully understood by the motor-cycling public, and I should like, therefore, to explain them.

Firstly, wherever possible, garages in towns or villages are visited by the travelling representative of the Union, who selects the one which, in his opinion as an expert, is most likely to render willing and efficient service to motorcyclists. This point is emphasized, as in some cases the larger garages prefer to cater almost entirely for car owners. The selected repairer is then required to fill in a comprehensive application form, which is placed before my touring committee, with a report, for their final approval.

In cases where the travelling representative is not able to call within a limit of time, repairers desiring appointment are required to obtain, on their application form, the names of two or more members of the Union who are willing to recommend the appointment from a personal knowledge of the applicant in question. Unfortunately owing to the change of proprietors, and such-like causes, the standard of efficiency is not always maintained, and nothing short of constant supervision can bring this to the notice of my committee. With some thousands of appointed repairers this is difficult, and I am always more than glad to receive notes from members regarding the service which they have received at the hands of official repairers.

Any complaints—which, by the way, are comparatively few and far between—are immediately and carefully investigated; and if found justified the repairer in question is removed from the books of the Union. The above applies equally to the appointment of hotels.

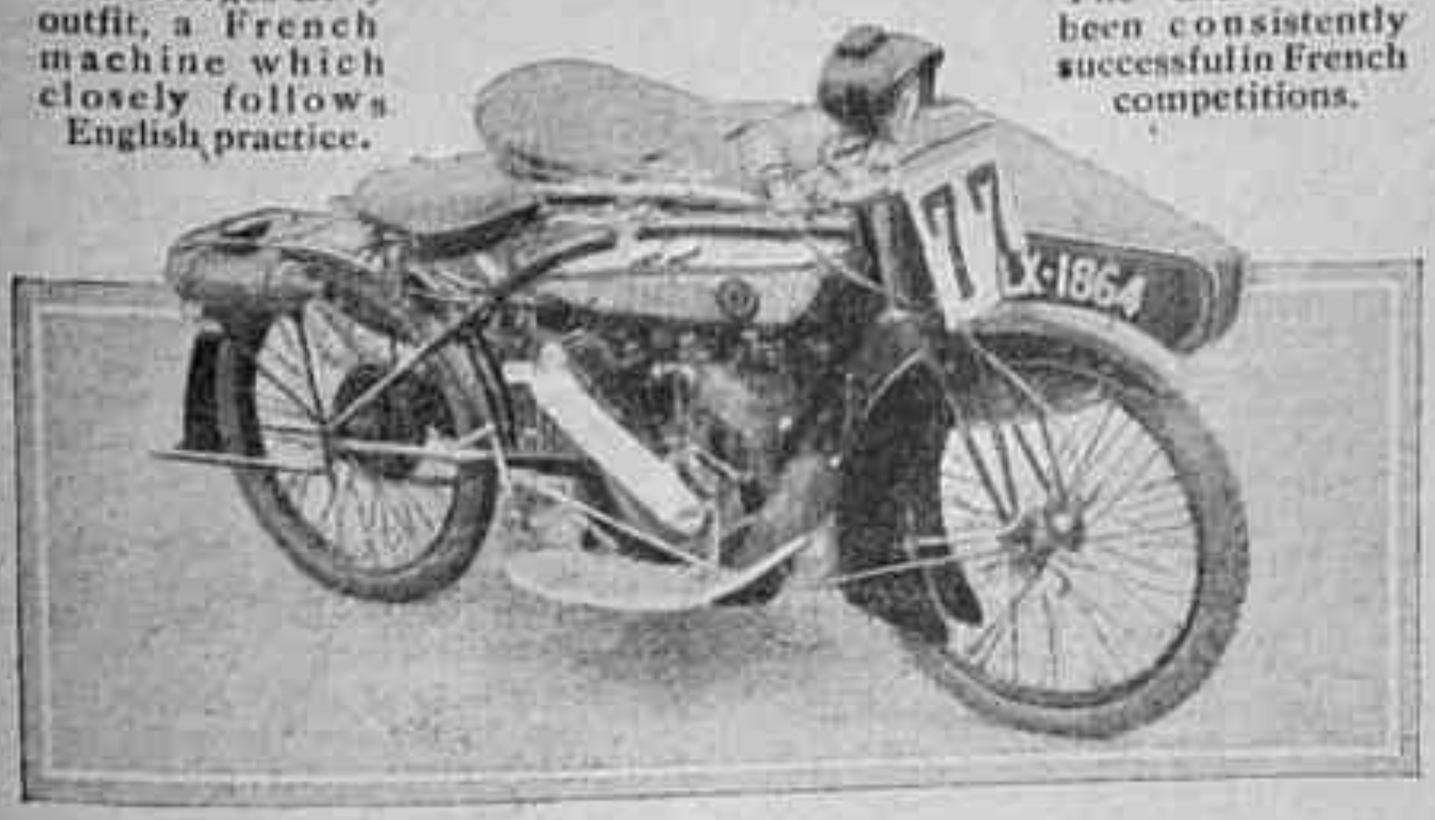
I trust that this will explain the matter, and show that the methods adopted are in no way the haphazard ones which a few individuals seem to imagine.

T. W. LOUGHNANE,
Secretary, Auto-Cycle Union.

649

The Georges Levy outfit, a French machine which closely follows English practice.

The G.L.'s have been consistently successful in French competitions.



Information and Advice

RULES.—Requests for information and advice must be forwarded in envelopes marked "I. and A.," a stamped addressed envelope being enclosed for the reply. Questions, and machines upon which an opinion is sought, should be numbered and a copy kept for reference. Touring and legal questions must be kept separate from technical matters. Readers are asked to refrain from making inquiries on the telephone. A selection from the replies is published each week.

Q I have recently purchased a 4 h.p. Kynoch-J.A.P. combination, and I shall be very much obliged if you can answer me the following questions: (1) The gears (a Sturmey-Archer three-speed hub) work perfectly when machine is in motion. I change up or down easily, but when I start up on top gear and drop down to middle and then bottom before putting clutch in, the gears do not move, and when I ease the clutch in, the engine will often stop just as gears slip in with a bang. I have lately tried starting the engine and then walking along with it until the bottom gear slips in place and then get on, but it is often necessary to walk a few yards and shake the gear adjusting rod. What can I do to cure this? (2) I can never get more than 45 miles per gallon. The carburetter is a B. and B., jet I believe is No. 38. I think I ought to get 50 to 55. How can I improve it? (3) When I change from middle to top gear, the engine knocks for a yard or two. Is this usual? I frequently retard the spark a little and then it stops. I think it generally happens when I am not going over quickly.—H.L. (Handsworth).

A (1) The trouble you are experiencing is a very common one in three-speed hubs, after they have run some distance, and it is caused by the operating spring losing its tension. We recommend you to carry on as you have been, and wheel the machine a yard or two until bottom gear engages. An improvement is sometimes effected by injecting a copious amount of special hub gear oil and by keeping the gear properly adjusted, which is done by placing the gear lever in the adjusting position and lengthening or shortening the operating rod (with the clutch in) until the free position is obtained. (2) You should certainly get more than 45 m.p.g. A No. 38 jet is far too large for your engine, and we recommend you to experiment with a size or two smaller, say 32 or 34. (3) This is caused by changing up too soon. Top gear should not be engaged until the machine has obtained a speed of about 15 m.p.h. It rather looks as though your engine could do with an overhaul, as the symptoms point to an excessive amount of carbon deposit. We advise you to take off the cylinder, clean out the carbon and grind in the valves.

850

Q Will you please advise me whether a 6 h.p. Rex motorcycle I have just purchased will pull a sidecar satisfactorily? It is a fixed-engine machine without pedals. If you do not consider it suitable, how can I fit it up cheaply for the purpose?—C.M. (Eastbourne).

A Your single-gear Rex will pull a sidecar fairly well in level country, but for really satisfactory results you require two or more speeds. The simplest way to carry out the conversion would be by fitting an N.S.U. engine shaft gear, particulars of which can be obtained from Messrs. Bradbury and Co., Ltd., Oldham, or Messrs. Eagles and Co., motorcycle engineers, High Street, Acton, W.

Q I have just decarbonized the cylinder of my B.S.A. motorcycle and cleaned the carburetter and magneto, the latter now giving an excellent spark. Having assembled the various parts again, I have great difficulty in starting, and when the engine is running, any movement of air or throttle levers immediately stops it again. (1) Can you suggest any reason for engine not starting, etc.? (2) What is the method of timing the magneto on a four-stroke engine? (3) How can the proper petrol level be found on a B.S.A. carburetter?

A (1) It looks as if you have not tightened up the carburetter properly on the inlet stump, resulting in an air leak, or possibly you have not adjusted the jet needle to give the correct opening. See that there is clearance between the valves and tappets and inject about a tablespoonful of engine oil in the cylinder through the compression tap, as possibly you did not oil the piston before replacing, which would affect the suction. (2) For your engine the following timing is about correct: The spark lever two-thirds retarded and piston top dead centre on firing stroke, couple up magneto so that the points are just breaking. (3) By detaching the carburetter body, leaving the float chamber attached to the petrol pipe. After the petrol has been turned on, the extent to which it rises in the jet can be viewed. The variation in the petrol level within reasonable limits is hardly likely to cause difficulty in starting, and so long as your carburetter does not actually flood, we advise you to leave it alone.

Q Will you kindly advise me on the following? (1) I have a new Matchless Victory model combination. Sometimes it is difficult to start engine by kick start, taking 20 or 30 attempts, whilst another time it starts quite easily. Can you account for this? (2) The J.A.P. engine is supposed to be 8 h.p., but I cannot see any markings to that effect. How can I tell if it is so? Where must I look for the number of engine? (3) Should I drive with the air lever wide open or in the vicinity of the throttle? (4) Can you tell me of a book on how to fit valve springs, etc.? (5) What spare parts should I carry on a long journey?—L.S.T. (Wanstead).

A (1) We are inclined to put this down to your not always setting the levers right. The air should be shut right off, throttle one-third open and spark almost fully advanced. Make sure that there are no leaks at the inlet pipe and carburetter unions, and that the magneto platinum points are clean and adjusted to give a break of half a millimetre. Make sure that both sparking plugs are internally clean. (2) The engine is undoubtedly an 8 h.p. You will find the number stamped on the crankcase, in front, at base of front cylinder. (3) Presumably you have an Amac carburetter fitted, in which case it should be possible to run with the air lever fully open at ordinary touring speeds. If this cannot be done, investigate for air leaks or try fitting a slightly larger jet, though this should not be necessary. (4) The makers of the engine, Messrs. J. A. Prestwich and Co., Ltd., Tottenham, N., issue a handbook giving complete details of the J.A.P. engine and its operation. (5) On a long journey you should carry spare inlet and exhaust valves complete with springs, collars and cotters, two spare plugs, spare connecting link, cranked link and spring clip for chain, tyre repair outfit, tyre gaiter and spare tube.

Q Would you please advise me what to do, as I had the misfortune to lose my driving licence about a week ago.—R.A. (Bexhill-on-Sea).

A A duplicate of a lost driving licence can be obtained from the authority which granted the original, upon payment of a fee of 1s.

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—**COULSON B.** Inquiries South Lancashire, North Cheshire and Isle of Man only. J. Blake and Co., Official Dealers, Liverpool—Manchester. zzz-405

—**COULSON B.**, 2¾, solo mount, Blackburne engine, 2-speed, spring frame. Order now. Sole London and district agents, London Motors, 61 Holborn Viaduct, London, E.C. zzz-74

—**DIAMOND**, the ideal lightweight, the machine that wins through in all competitions; good deliveries from the sole Leicestershire agent, Will Chapman, Belgrave Rd., Leicester. 513-a489

—**DOT.** You will be interested in the 2¾hp Dot-J.A.P. lightweight. Built as these machines have been in the past, the general construction requires no elaboration on our part. Demonstrators shortly available. Moderate price. Maudes' Motor Mart, Sole Agents for Middlesex, Surrey, Kent, Essex, Hertford, Buckingham and Cornwall and Devon. Trade orders now being booked. 100 Gt. Portland St., London, W. 1, and 100 Paris St., Exeter. 518-152

—**DOUGLAS.** It appears ridiculous to advertise when you have no stock, but we are giving deliveries to the early birds. Place your order at once if you want delivery. Ell Clark, Douglas Agent, 186 Cheltenham Rd., Bristol. zzz-165

—**DOUGLAS.** Place your order with the Douglas Expert. Satisfaction is my motto. Gibb, Gleaner-ter, Thirsk 883. 366-417

—**DOUGLAS**, 2¾, 1919, brand new, immediate delivery, £82. Stretton and Smith, 21 Woodstock St. (off New Bond St.), W. 1. Mayfair 3129. 518-129

—**DOUGLAS** combination, 4hp, 2 speeds, etc., very smart outfit, 70 guineas. Lowith, 6 Mount Pleasant Road, Ealing. 518-b557

—**DOUGLAS**, 2¾hp, 1911-12, spares included, fine condition, owner cannot ride, £20. Box No. 2638, c.o. "Motor Cycling." 518-b473

—**DOUGLAS**, 2¾, Bosch magneto, perfect running order, £25. 23 Rowland Grove, Sydenham. 518-b438

—**DOUGLAS**, 3¼, 2-speed, k.s., clutch, Klaxon, dues, very smart, 65 guineas. Taylor, 2 Victoria Rd., Walthamstow. 518-b445

—**DOUGLAS**, 3½hp, 1914, 2-speed, k.s., clutch, speedometer, Lucas lighting set, spares, accessories, appearance as new, £57 10s. 56 Ormeley Rd., Balham. 518-b460

—**DOUGLAS**, 1914-15, 2¾, 2 speeds, exchange 1914 Scott, 54 guineas, offers. 81 Dundee Rd., South Norwood. 518-b374

—**DOUGLAS**, 3½hp, sporting model, fitted with T.T. bars, and Philipson pulley with hand operation, £75. Parker's, Bradshawgate, Bolton. 518-b53

—**DOUGLAS**, 1915, 2-speed, splendid condition, £55; after 5 p.m. 114 Warham Rd., Harringay, N. 518-b527

—**DOUGLAS**, 2¾, 2-speed, accessories, extra fast, £56. Bailey, Perry St., Chislehurst. 518-b518

—**DOUGLAS**, 1918, 4hp combination, horn, tools, 90 guineas. 56 High St., Tooting. 518-b661

—**DOUGLAS**, 2¾, 1915, very good order, new tyres. R.S.A.S. 3 Malbrook Rd., Putney, S.W. 15. £50 net. 518-b665

—**DOUGLAS** 4hp combination, new tyres and accessories, £35, 56-mile trial given. 294 Mt. Pleasant Rd., Tottenham, N. 17. 518-b672

—**DOUGLAS**, 1917, 2¾, W.D. model, lamps, horn, pump, etc., in new condition, £55; also 1915 model, with footboards and equipped, £48; seen any time. 10 Marlborough Rd., Old Kent Rd., S.E. 518-b681

—**DOUGLAS** combination, 4hp, August, 1919, electrically equipped, mileage 200, 1920 clutch, £145. 38 Burlington Rd., W. 2. 518-b451

—**DOUGLAS**, 3½hp, 2-speed, uncrated in June, all-black model, absolutely perfect, very fast, mileage about 300, beautifully equipped, heavy Dunlops, £95. 60 Wallingford Ave., N. Kensington. 518-b482

—**DOUGLAS**, 1915, 2-speed, 50 guineas, ride away. 55 Wiltshire Rd., Brixton. 518-b474

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—**DOUGLAS**, 4hp, 1919 combination, T.T. bars, specially coach-painted sidecar, tank to match, maroon, lined red, spare belt and new chain, the whole in perfect condition and really smart outfit, and a bargain for £125, no offers; appointment by letter. Newbold, 23 Melrose Rd., West Hill, Wandsworth. 518-b535

—**DOUGLAS**, 3¼, 2-speed, just overhauled in perfect condition, trial, £40. H. Smith, 41 Clarence St., Chiswick, W. 4. 518-b522

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—**INDIAN** 7-9 combination, 1915, privately owned, roomy Millford sidecar, excellent tyres, spare cover and tube, accessories and spares, £85, or exchange lower power, adjustment. 175 Camberwell Grove, S.E. 5. 'Phone, Brixton 256. 518-b663

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—PREMIER, 6hp, coach-built combination, countershaft 3-speed, clutch, kick start, windscreen, speedometer, accessories, purchased 1916, little used, £79 10s.; lightweight taken part ex. change. 36 David Lane, Shadwell, E. 1. 518-b27

—RADCO, 1919, with accessories, been tested, £42 10s. Raymanide Motor Cycle Co., 6 Station Parade, Balham. 518-b424

—REX, 3½hp, 2-speed, clutch, etc., excellent machine, useless to owner, £28. Box No. 2636, c.o. "Motor Cycling." 518-b471

—REX, 3½hp, T.T., good tyres, good going order, £35. Sewell, 25 Catford Hill, S.E. 6. 518-b465

—ROVER, 6hp J.A.P., military model, 3-speed, c.s., k.s., hand clutch, and coach-built sidecar, with overall apron, the whole as new, £125. The Service Co., Ltd., 289-293 High Holborn. 518-138

—ROYAL ENFIELD, 2¾ twin, wants timing pinion, cheap, £35. Wickham, Hillbury, Wells, Somt. 518-b513

—ROYAL RUBY, 1916, 7½hp, 3-speed, kick starter, hand-controlled clutch, recently overhauled and fully equipped, £55. Parker's, Bradshawgate, Bolton. 518-164

—RUDGE, 3½hp, 1914, garage during war, recently overhauled, clutch, good belt and tyres, runs splendidly, can take sidecar, ride away, bargain, £53. Roberts, Clevedon House, Somerset Rd., New Barnet. 518-b149

—RUDGE, 3½, clutch model, lamps, good order, fast, £46. 122a Richmond Rd., Raynes Park, S.W. 518-b149

—RUDGE-MULTI, 3½hp, in splendid running order, £55. The Stansted Motor Co., Stansted, Essex. 'Phone, Stansted 35. 518-130

—RUDGE-MULTI, 1919, new, in stock, £20; book your order for early delivery of 3½ and 5-6 models. Grover, Smith and Willis, Basingstoke. 518-b170

—RUDGE-MULTI, 1919, 3½hp, T.T. Isle of Man model, with hand-controlled clutch, racing Canoelet sidecar, lamps, speedometer, spare belt, outfit new 3 weeks ago, hardly soiled, £125. Elce and Co., 15-16 Bishopsgate Avenue, Camomile St., E.C. 3. 518-147

—RUDGE-MULTI, 1919, I.O.M., early deliveries. Shepherd and Co., Enfield Highway. Tel., Waltham X 31. 518-174

—RUDGE-MULTI, June, 1919, 200 miles, £59. Williams, Brightview, Hadley Rd., New Barnet. 518-b422

—RUDGE-MULTI, 3½hp, late model, plenty of spares, like new, £60 or near offer; appointment. Burrell, Men's Hostel, Arching Rd., Well Hall. 518-b629

—RUDGE MULTI, 3½hp, hand-control clutch, just overhauled as good as new, take sidecar anywhere, £48. 103a High St., Wandsworth. 518-b656

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—SUNBEAM, 1915, sports model, 8-10hp, with Henderson Elite streamline sidecar, disc wheels, Lucas lamps, Klaxon, etc., superb turnout, 230 guineas. Box No. 2656, c.o. "Motor Cycling." 518-b545

—SUNBEAM, 6hp, 1917, 3-speed, clutch, kick-starter, new lamps, horn, mirror, tool bags, etc., £95. Raymanide Motor Cycle Co., 6 Station Parade, Balham. 518-b423

—SUNBEAM 8hp black and gold 1919 combination, brand new, highest offer. Box No. 2675, c.o. "Motor Cycling." 519-183

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—SUNBEAM, 1919, 3½hp, Mills-Fulford Sunbeam sidecar, complete with all accessories and spares, makers' delivery 26-7-19, mileage 358, guaranteed perfect, £165, offers; first wire accepted. G. F. Bates, 23 Lichfield St., Hanley, Staffs. 518-b674

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—TRIUMPH, late 1914, 6hp, 3-speed, hand and foot clutch, lamps, horn, tools, stored greater part of war, tip-top condition, £60. Humphreys, Pumping Station, Hadley Rd., Enfield. 518-b542

—TRIUMPH motor bicycle and sidecar, 1914 date, 4hp, good condition, £80. Coghlan, Somerset Inn, Yeovil. 518-b531

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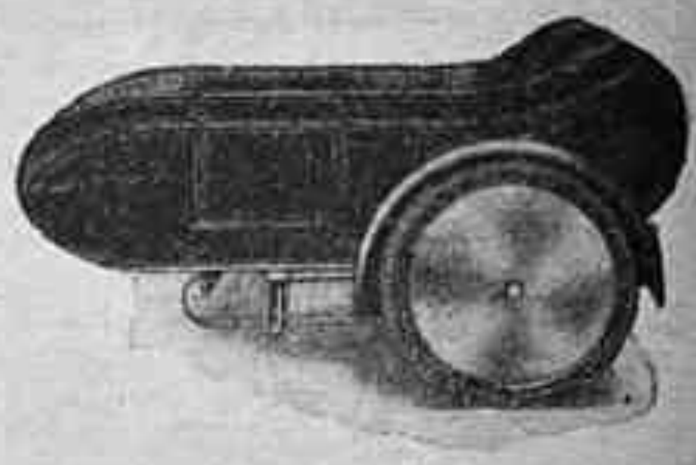

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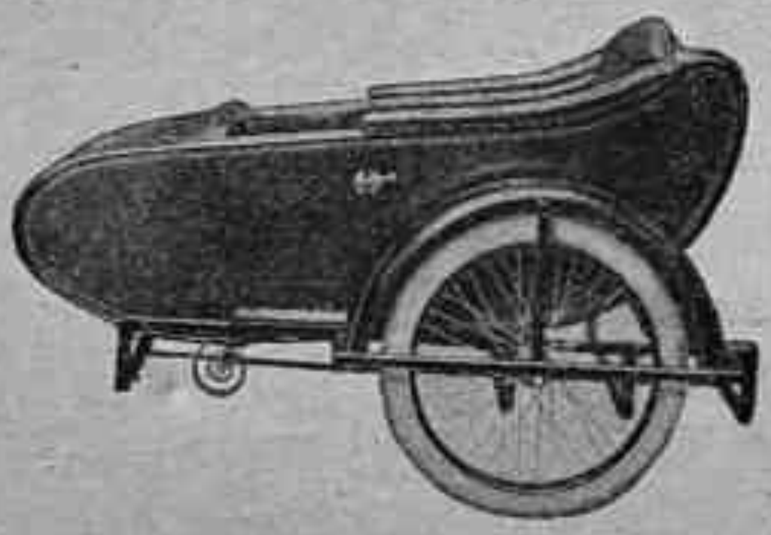

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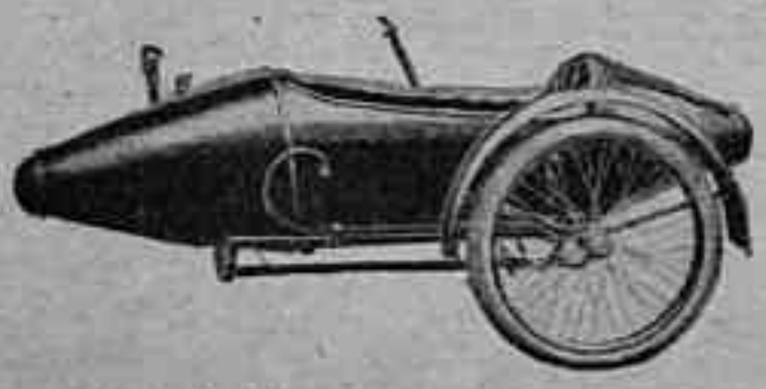

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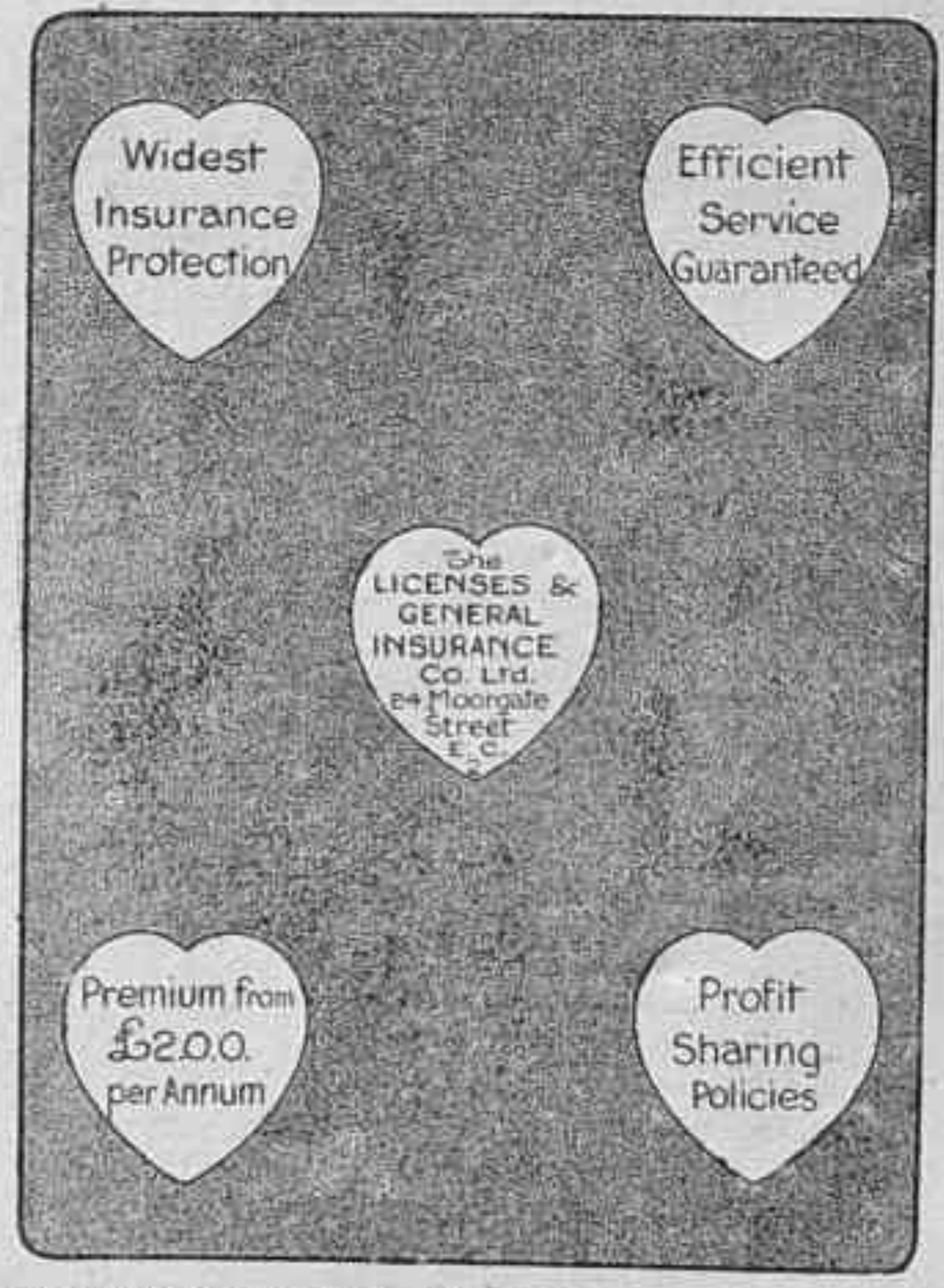

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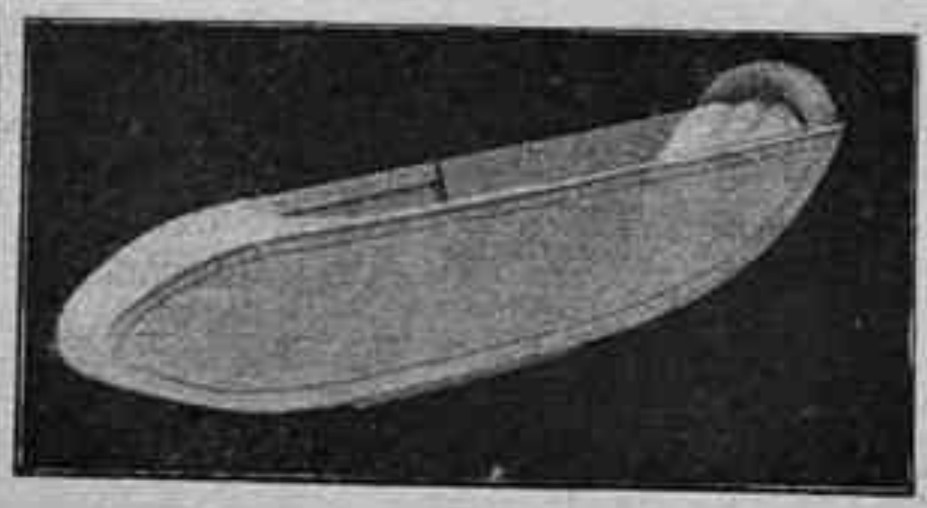

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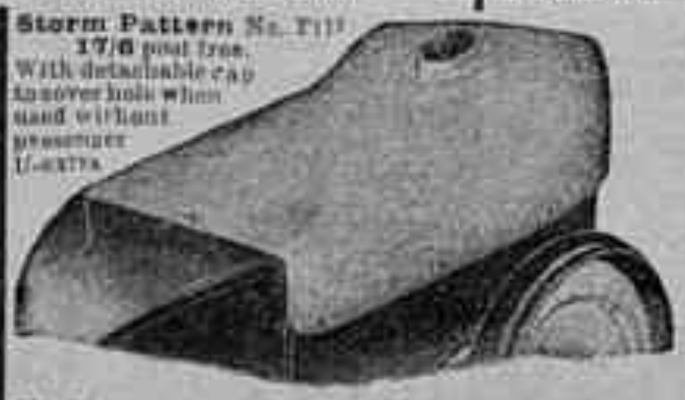

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